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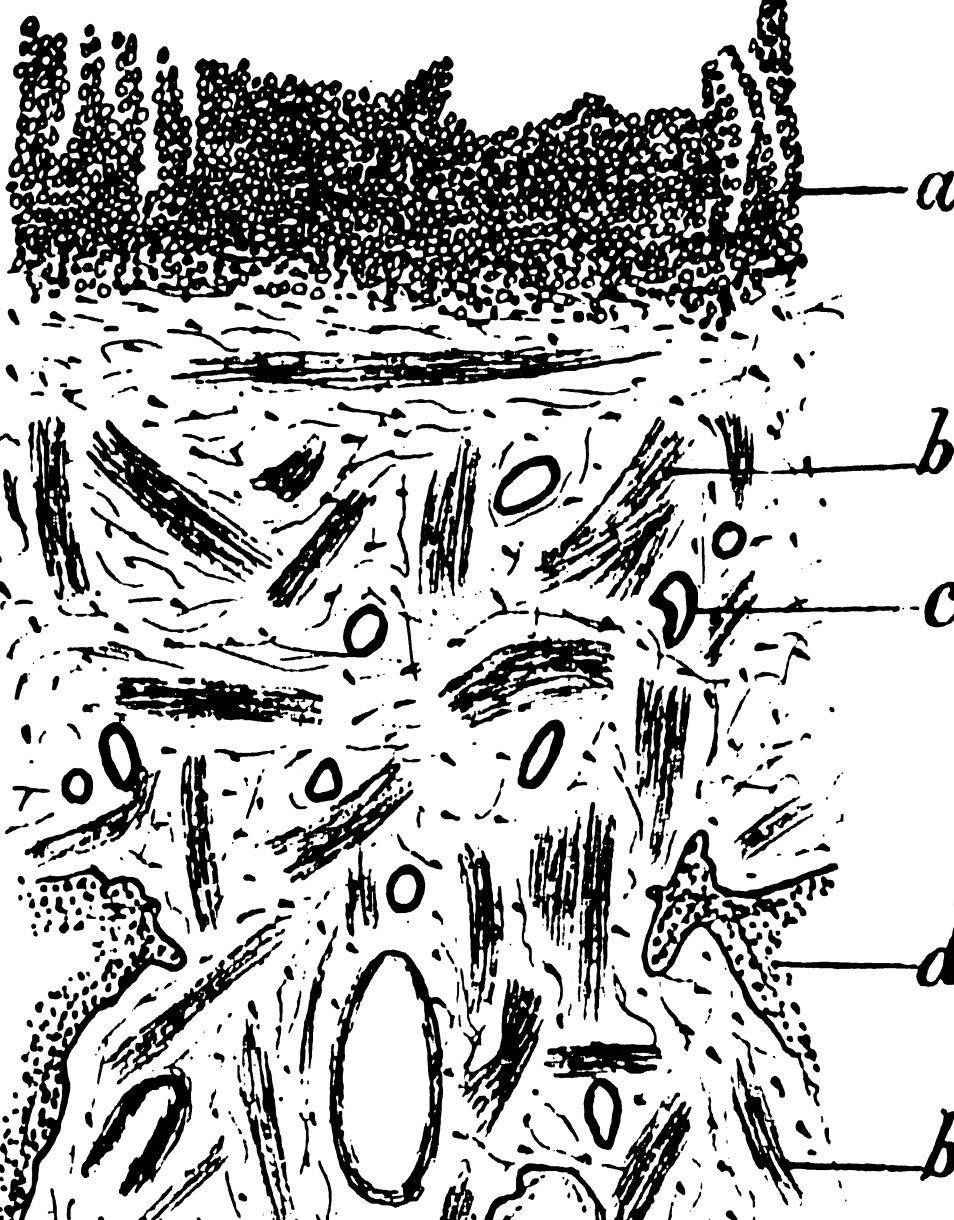
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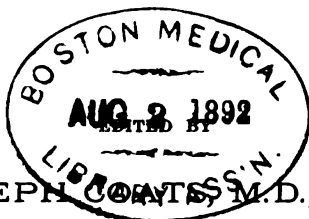
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DISCUSSION ON ANÆSTHETICS

IN THE

MEDICO-CHIRURGICAL SOCIETY OF GLASGOW.

ADJOURNED MEETING.—31ST OCTOBER, 1890.

(Continued from vol. xxxiv, p. 431.)

The President, DR. WILLIAM MACEWEN, in the Chair.

XIV.—THE CLINICAL ASPECTS OF ANÆSTHETICS.

BY PROFESSOR GEORGE BUCHANAN.

PROFESSOR GEORGE BUCHANAN said that he would limit his remarks almost entirely to the clinical aspects of anæsthetics. He was one of those who had the longest experience of the subject, of those now living in Scotland. In 1846 he experimented upon himself with ether, two or three days after the news of Dr. Morton's introduction of that agent for anæsthetic purposes reached this country, and with perfect success. From that day to this, with the exception of a whiff of nitrous oxide, he had never taken an anæsthetic. But though, personally, his experience had been limited to that one experiment, he had necessarily had a large experience in the administration of anæsthetics. He agreed with Sir George Macleod in regard to the great caution to be exercised in drawing conclusions from statistics, because there were many

questions involved, of which a mere numerical enumeration of cases took no cognisance. He had endeavoured, as guardedly as possible, to come to some conclusions on statistical data, but found it very difficult. He had assumed as the basis of his calculation the statement of the Superintendent of the Western Infirmary, that from the opening of that institution in 1874 to the present time anæsthetics had been used some 12,000 times, and he was not far off the mark in assuming that one quarter of these, or 3,000, had been cases of his own. He calculated that from 1860 to 1874, when he was clinical and operating surgeon in the Royal Infirmary, in which the number of cases was greater than in the Western Infirmary, he must have had, during these 14 years, at all events 3,000 cases; and that for the whole 30 years from 1860, he must have had more than 3,000 or 4,000 cases in private practice; so that in all he could not have had fewer than 10,000 cases of anæsthetic administration. Looking back (he said it with fear and trembling), he was most thankful that his success had been what it was. It was in no spirit of boasting that he said that during the whole of that time only one person under his charge died from the administration of anæsthetics. That case was somewhat peculiar. The patient had recovered from the anæsthesia, had entrusted him with some message to town (she lived in the country), and said good bye to him, and he was on the point of leaving the house when he was recalled by the family medical man, who had been alarmed at her sighing. In half an hour the patient was dead from cardiac failure. This was his only case of death, but many times he had been in the presence of the utmost danger. With regard to the cause of danger in the majority of cases, it was owing to failure of the respiration. Sometimes sickness was a source of danger and great annoyance, this always ending in syncope. In a notable number of cases, though not in the majority, danger arose from syncope. In such cases, of which he had seen many, he would never believe that death from failure of the circulation was not imminent, if energetic means were not taken for their recovery. As regarded the best means of restoration, he had great faith in giving the patient a slap or two over the chest and face with a wet towel. In many cases that was more effective than any other means. In one case of amputation at the hip-joint, Dr. Knox was giving the chloroform, and he himself was occupied with the flaps, when he was startled by Dr. Knox saying, "The man is dead." He gave him two slaps with a wet towel, when he heaved a great sigh, and began to

breathe, and soon breathed quite well. Artificial respiration should be conjoined if the respiration were especially at fault. In failure of the circulation, the depression of the head had a marked effect. In the case of a child, he had no hesitation in holding the patient by the two feet, and the effect was at once apparent on the blood flushing the lips and cheeks.

As regarded legislation for the regulation of anæsthetics, it would involve an unwarrantable interference with the medical practitioner's freedom of action; and it would inevitably operate in diminishing the sense of responsibility of the practitioner. At the same time, by all means have two medical men present when possible.

As regards previous examination, he never knew beforehand whether a given patient would take chloroform well or not. He had not been able to find out the conditions of the problem; and he simply acted on the assumption that if the patient were able to stand the operation he would be able to stand the anæsthesia. He did examine his patients before giving chloroform, but never on the operating table. If the administration of chloroform was so much a matter of danger, as has been stated, that it should be done only by a man of long experience in its use, then it should be discontinued altogether. But the instruction in giving anæsthetics is a most important part of a student's education. His practice as regards his students was to permit the senior students, about the middle of the session, first to familiarise themselves with the details, and he gradually led them on till they were entrusted, under his eye, with the actual administration of the anæsthetic. He held strongly that they should be taught to give chloroform just as they were taught to pass the catheter; and in his experience this could be done with safety. When the students became qualified medical men in a technical sense, they could not be prevented from giving anæsthetics; and it stood to reason that if they had been practically taught while students, the danger would be greatly lessened. No doubt, the teacher in cases in which the students were allowed to administer it, was the person responsible. As regarded ether, he had given it many times, and several times with Clover's inhaler. But his experience of both anæsthetics had led him now to the use of chloroform only, though some years ago he gave up a portion of his cases to the Glasgow Committee on Anæsthetics for a trial of the dichloride of ethedine. This agent, however, had the disadvantage of being expensive, and certainly did not act more rapidly than chloroform.

XV.—EXPERIMENTAL OBSERVATIONS AND INFERENCES RELATING TO THE PHYSIOLOGICAL ACTION OF AN OVERDOSE OF AN ANÆSTHETIC—INFLUENCE OF RESPIRATORY MOVEMENTS ON THE SYSTEMIC AND PULMONIC CIRCULATIONS—CHANGES IN THE LUNG AND CARDIAC IMPULSES—INDICATIONS OF DANGER IN CHLOROFORM NARCOSIS.

By DAVID NEWMAN, M.D.

MR. PRESIDENT AND GENTLEMEN,—I think you will agree with me when I say, that those who have had the arrangement of this discussion did well when they asked Dr. Joseph Coats to read the introductory paper. As a fellow-worker with Dr. Coats, in the Glasgow Committee, I can fully appreciate the admirable manner in which he summed up the facts, and laid before you the opinions arrived at by that Committee. I may say that I quite concur in all that Dr. Coats has said. He points out very clearly the various methods or ways in which chloroform anæsthesia may terminate fatally. It is undoubtedly very important to recognise the circumstance that an anæsthetic may cause death in *more than one way*. This was clearly pointed out by the Glasgow Committee many years ago, so that it is unnecessary for me, at this time, to enlarge on the subject. This evening, I desire to limit your attention to the physiological action of anæsthetics *when the drug is pushed*, and the man or animal dies from the *effect of an overdose*.

My first experiments were performed many years ago upon large dogs. Every precaution was taken to prevent any impediment to respiration, and the animals were supplied with chloroform vapour until the action of the heart and respiration ceased, after which, in most instances, a section was made, and the condition of the organs examined. Given in the way I have just mentioned, the anæsthetic usually required from 10 to 12 minutes' continuous administration to produce death.

Experiment I.—Large retriever, 9 years old. The upper air passages being free, on opening the thorax, the lungs immediately collapsed to the size of the closed fist, and air rushed out of the mouth. This collapse of the lung was, of course, due to the action of the pulmonary elastic tissue, per-

mitted by the admission of air into the pleuræ. The lungs contained practically no blood, but the large veins and right cavities of the heart were greatly distended with blood, which was fluid and of a dark cherry-red colour, and, when exposed to the air, soon became of a bright red colour. The coronary veins were greatly distended. The left chambers of the heart and the arteries were almost empty. The coronary arteries contained practically no blood. The heart was soft and flabby, and on section the muscular fibres contracted before the knife, and on stimulation of an interrupted current.

Experiment II.—A collie, aged 11 years. Chloroform administered in the same way. The only variation in the experiment being that a cork was placed in the trachea immediately after death, and before the chest was opened. The conditions of organs noticed were very much the same as in Experiment I. The only difference was that on account of the trachea being blocked, opening the pleuræ was not followed by collapse of the lungs. It was observed that these organs were even more anæmic than in Experiment I.

Experiment III.—A collie, aged 9 years. Chloroform administered as in previous experiments, but, after natural respiration ceased, artificial respiration was performed by raising and compressing the ribs. This was continued for a quarter of an hour without any spontaneous respiration taking place. On opening the thorax, not yet having lost their elasticity, the lungs collapsed, but these organs were observed to contain a moderate quantity of blood, and, moreover, what is very important, *left cavities of the heart and the arteries contained four ounces of blood.*

Experiments IV and V.—Two retrievers were poisoned with chloroform; the first one was left alone after death, while in the other dog artificial respiration was performed for 20 minutes, in the same way as in Experiment III, and the section of both dogs was made the following day, with the same results as obtained in Experiments I and III.

In Experiment VI artificial respiration was carried on by injecting air into the trachea, sometimes pure air, at other times air saturated with chloroform vapour. On several occasions the pulsations of the heart became imperceptible, but by performing artificial respiration, and by stimulating the heart by an electrode passed into the cavity of the pericardium, the action of the heart was restored. For 20 minutes after the heart ceased to pulsate artificial respiration was continued, and, as a consequence, the heart and lungs were found to be in the same condition as in Experiment III, with

the exception that there was not quite so much blood in the left chambers.

It may be asked, What is the inference to be drawn from these very simple experiments? But before considering this question permit me to draw your attention to the influence of the normal respiratory movements upon the systemic and pulmonic circulation. This influence is too frequently forgotten in considering physiological problems, and it is not always remembered that the *circulation of the blood is not carried on by the heart alone*.

I have already shown you that when the thorax of an animal just dead is opened, the lungs collapse to about one-sixth of their normal capacity. So long as the sac of the pleuræ is intact, the parietal and visceral layers are kept in apposition by a sucker-like action. The constant tendency of the elastic tissue of the lung to contract, both during inspiration and expiration, leads to a negative pressure (*intra-thoracic pressure*)* upon the other structures within the chest. The more completely the lungs are expanded the greater will be the suction action induced by this negative pressure. During calm respiration, but more especially during inspiration, blood is being aspirated into the great vessels of the thorax, while, at the same time, by descent of the diaphragm, the abdominal veins are compressed and the blood within them is forced upwards.

Forced expiration, or holding the breath, causes, on the other hand, a positive intra-thoracic pressure, and produces an effect upon the circulation easily demonstrated. The large veins become distended, the right side of the heart is gorged with blood, and the pulmonary artery and its radicles are filled, while the pulmonary veins contain little blood. While those changes are taking place on the right side of the heart, as a consequence of increased intra-thoracic pressure, on the left side the quantity of blood in the cavities of the heart is being diminished, and the arterial tension is steadily decreased.

So much for the effect of intra-thoracic pressure; but we have still another factor to deal with, namely, the effect of respiration upon the capillary circulation in the lungs. When an individual takes an inspiration, the air within the air-vesicles of the lungs is increased in volume, and its pressure is diminished until an equilibrium is produced by a rush of air through the trachea. During the time that this equilibrium is

* I believe first described by the late Professor Andrew Buchanan in *The Forces which carry on the Circulation of the Blood*, 1874.

being attained, the capillaries in the alveolar walls are subjected to a minus pressure, and hence they distend. While expiration is proceeding the conditions of matters is reversed, so that blood is expelled from the lungs, but only in one direction, namely, towards the left auricle. The blood is prevented from flowing backwards to the right chambers, either by the contracting right ventricle or by the pulmonic valves. You therefore see how important free respiration is to the pulmonic circulation, and you will observe that the lungs act toward the pulmonic circulation on the principle of a Higginson's syringe, the nozzle corresponding to the cardiac end of the pulmonary vein.

I have only referred very briefly to the influence of respiratory movements on the circulation to prepare your minds for what I am now going to say respecting the action of anæsthetics.

By the experiments I have so shortly described to you, it is abundantly evident that when the animal *dies from the effect of an overdose of chloroform*, the most striking effect is the engorgement of the large veins, and the dilatation of the right chambers of the heart, while the left cavities are almost empty, unless artificial respiration has been performed, by which process blood is pumped through the lungs. This was noticed by me some years before the Glasgow Committee was appointed, but they also observed the same facts. In order that we might ascertain the cause of this phenomenon, I undertook the performance of a series of careful and complicated experiments. These experiments were devised to demonstrate how far this interference with the circulation was due to debility of the heart, to obstruction in the lungs, or to some influence on the circulation acting through the nervous centres governing it.

I will not trouble you with the details of this research; they are already published.*

The first question I have to answer is—What are the changes which take place in the lungs *when anæsthesia is pushed to its utmost point*, and how are these alterations to be explained?

When anæsthetics are administered in excessive quantities, the first change noticed in the circulation in the lung is a diminution in the rapidity of the flow of blood in the capillaries; and this, notwithstanding that the number of the heart's impulses remains unchanged, and the circulation through

* "On the Effect of Certain Anæsthetics on the Pulmonary Circulation" (*Journal of Anatomy and Physiology*, vol. xiv).

the larger vessels is unimpaired. Very shortly after this, instead of the flow of blood being constant, it gradually becomes intermittent—first in the capillaries, afterwards in the arterioles, and subsequently in the larger vessels. This intermission in the flow of blood is followed by a swinging to-and-fro movement of the corpuscles, just previously to the stoppage of the circulation through the capillaries.

It must now be observed that the stoppage of the circulation in the lung takes place first in the capillaries, then in the arterioles, and, last of all, in the larger vessels; further, that the sequence in recovery is exactly the reverse. Again, it is to be noticed that the circulation in the foot stops—not previously to, but shortly after, that of the lung; and its re-establishment never occurs before, but always subsequently to, the restoration of the pulmonary circulation.*

As regards the calibre of the arterioles and capillaries, it may be roughly stated that the former contract a sixth, the latter a ninth, from what they were previous to the administration of the anæsthetic vapour by artificial respiration. The causes of this contraction will be considered hereafter. Should repeated supplies of air be now passed into the lungs, the condition of these organs will be restored to what it was before the anæsthetic was given.

The corpuscles themselves appear also to be altered by the action of the anæsthetic vapour, in so far that, at some points, they appear as if they had become completely disintegrated, and their place filled by a mass of a reddish-coloured material, which disappears on the re-establishment of the circulation. This appearance is probably due to an alteration in refraction—not to an actual destruction of the corpuscles.

Before answering the question how these alterations are to be explained, I may ask your attention to another series of experiments to determine the effect of anæsthetics on the cardiac impulses. These experiments were performed by means of an apparatus constructed for the purpose. A sheet of paper 8 feet long, and broad enough to accommodate ten tracings at different levels, was adapted to the cylinders, so that a continuous tracing of 80 feet, if necessary, might be obtained; at the same time a record of time was taken, corresponding to each individual tracing; and, besides, by means of electro-magnetic arrangements, the periods at which anæsthetics were administered or certain changes observed were recorded. Fig. 6 shows selected portions of these tracings.

* These experiments were performed upon frogs. See report of Glasgow Committee.

The method adopted in recording the movements of the heart was very simple. The heart was supported upon a small stage, so as to prevent the movements occasioned by artificial respiration affecting the tracing of its impulses. A lever, 20 c.m. long, was placed obliquely across the heart, so as to rest both upon the auricle and ventricle, in order that the first portion of the upstroke might correspond with the contraction of the auricle. When the ventricular contractions closely follow those of the auricle, the ascent line is straight; and no indication of the latter, as separated from the former, can be detected; whereas, if the ventricular contractions are delayed, the lower portions of upstrokes become curved (Tracing VIII, Fig. 6).*

With the purpose of instituting a standard of comparison, a tracing of the heart's impulses is shown in Fig. 6, Tracing I, where the frog was under the influence of curare. The heart's impulses were $40\frac{1}{2}$ per minute, while the period of activity may be said to occupy 2·5 hundredths of a minute, so that the period of rest, as far as indicated by the tracing, may be regarded as *nil*.

Chloroform was now given for fifteen minutes, by means of artificial respiration, to the curarised frog, and another tracing taken (Fig. 6, Tracing II). It may now be observed that the heart's beats are 23 per minute, and still the period of rest is not distinctly marked. In these tracings the up-strokes are rapid, and the periods occupied in the contractions are not great. Tracings III and IV show the pulsations of the heart under the influence of ether, the former immediately on the heart being exposed, the latter after ether had been administered for seven minutes by artificial respiration. The pulsations in III and IV are 21 and 19 respectively, so that, as contrasted with Tracing I, they may be said to be diminished in number by about a half. The period of rest is not well marked in either of these tracings. Tracings V and VI were taken from a frog under the influence of ethidene, the one on exposing the heart, the other after ethidene had been given by artificial respiration for five minutes.

Let us now examine these tracings more carefully. In Tracing V the pulsations are 16 per minute. The period of activity occupies about 2·8, and that of rest 3·5 hundredths of a minute. The ascent line is not quite straight, there being a slight curve both at the apex and base; the apex is rounded, and the descent line slightly sloped. In Tracing VI the

* The tracings are published in the report of the Glasgow Committee, *British Medical Journal*, 18th December, 1880.

impulses are diminished in number to 7 per minute. This diminution will be seen to be due to two causes: first, and principally, to prolongation of the period of rest; and, second, to lengthening of the period of action, so that not only are the spaces between the waves greater, but the intervals between the origin of the ascent lines and the termination of the down strokes are also increased. To represent this in figures, it may be said that the period of activity equals a little more than four-hundredths, and the period of rest ten-hundredths of a minute. Tracings VII, VIII, IX, and X are those of a frog under the influence of chloroform. Tracing VII, immediately on exposure of the heart; VIII, after artificial respiration with chloroform for two minutes, 150 c.c. of vapour having been employed; IX, recovery after artificial respiration with air for three minutes; and X, after giving 200 c.c. more of chloroform vapour, the time occupied being two minutes. The impulses in Tracing VII are 11 per minute. It will be observed that, from the termination of the down stroke to the beginning of the following ascent line, there is a gradual rise in the tracing. This is due to the slow filling of the cavities of the heart. The up strokes are slightly curved, the apices rounded, while the descent lines are almost straight. By pushing the chloroform by means of artificial respiration, we always get tracings similar to what is represented in VIII. Take, for instance, the large wave in the centre of the tracing: instead of the up stroke arising directly from the basement line, it is preceded by a small wave (A^1), corresponding with the contraction of the auricle. From the apex of this wave it rises slowly so as to form the ascent line, which terminates in a rounded apex. The descent line frequently terminates in a smaller wave (Tracing X, A^2), which also corresponds with a contraction of the auricle. It is further to be noted that the auricular contraction (Tracing VIII, A^2) are not always followed by corresponding ventricular movements, the auricle continuing to contract at regular intervals, although the ventricle ceases to respond.

Let us now consider the facts demonstrated by the tracings, placed alongside the changes observed in the lung by means of the microscope.

It is evident that the interference with the proper action of the heart accounts to a considerable extent for the changes in the pulmonary circulation and tissue. Thus the slowing of the circulation through the lung, and the diminution of the calibre of the arterioles and capillaries, correspond exactly with the impairment of the heart's impulses; but then, again,

it may be questioned how far the stoppage of the heart depends upon increased resistance to the flow of blood through the pulmonary vessels. We have shown above that, when the lung is exposed, the current of blood is continuous, there being no intermittent movement, as a result of the ventricular contractions; when, however, anæsthetics are administered in larger quantities, the flow becomes interrupted, the arterioles and capillaries diminish in calibre, and certain changes are observed in the pulmonary tissue. The changes in the diameter of the vessels may be regarded as a result of a retardation, and less forcible contracting of the ventricle; or it may be due to local effects of the anæsthetic upon the lung, producing greater resistance to the flow of blood, and so preventing the heart emptying itself. The latter idea is supported by the fact that, when the animal is deeply under the influence of the anæsthetic, particularly chloroform, the right cavities of the heart are greatly distended. Another fact which must not be forgotten is the change in the condition of the corpuscles and of the capillaries. The mutual relationship of these may be so altered, by the direct action of the anæsthetic, that the force of the heart required to propel the blood through the pulmonary vessels is increased; while by reason of the action of the anæsthetic upon the heart, the power at its disposal is considerably diminished. The disintegration of the blood corpuscles, as pointed out above, shows distinctly that the anæsthetic vapour has a direct effect upon the blood.

Then, looking for an explanation from the impairment of respiratory movement, I have always observed, when chloroform was pushed in the human subjects or in dogs, that the diaphragm continued to contract, and the abdominal walls were raised, for some time after there were no other evidence of air entering the lungs. This pseudo diaphragmatic movement is very deceptive, because it is inefficient, and is the *immediate forerunner of death if the administration of the anæsthetic be continued, and if artificial respiration be not immediately employed.* Now, you must observe, as soon as true thoracic respiration ceases, the whole responsibility of carrying on the circulation is thrown upon an already enfeebled heart, enfeebled not only by the action of the drug, but also by engorgement of the coronary veins with venous blood, and a deficient supply of arterial blood.

When one of the large veins of the neck is exposed in an animal under the moderate influence of chloroform, it is observed to be distinctly less prominent during inspiration.

This emptying of the vein begins at the first moment of inspiration, and continues as long as air enters the chest. When the inspiratory act ceases, there being less blood entering the chest, the veins swell up again, to be rapidly emptied during the next inspiration. Now, when chloroform is pushed until respiration is carried on *by the diaphragm* alone, the interrupted suction action is not observed in the veins of the neck, but the blood flows through them in a continuous stream, and collects in a large quantity in the large veins of the thorax, and in the right chambers of the heart.

Another point worthy of note is that sometimes during the time respiration is apparently going on, as observed by diaphragmatic movements, and even movements of the chest wall, no air may be entering the chest, at least not sufficient to produce a sound, or to move the flame of a small taper.

A great deal of useless discussion has taken place as to whether deaths from chloroform take place from interference with the respiration or the circulation, some observers contending that the heart always fails before the lungs, while others hold exactly the opposite view. I have no desire either to take the one side or the other, for it seems to me that not only are the two functions most intimately dependent upon each other, but their nerve centres are also similarly exposed to the influence of the drug. I am speaking at present only of deaths during deep chloroform narcosis.

INDICATIONS OF DANGER IN DEEP CHLOROFORM NARCOSIS, AND HOW TO AVERT THEM.

1. Sudden fall in the arterial tension is seldom observed in the human subject or in animals, when they are deeply under the anæsthetic. The fall is usually a gradual one, and is accompanied by an alteration in the character of the pulse, caused by delay in contraction of the left ventricle, after the left auricle has emptied itself.

2. When *costal* respiration becomes feeble, or is replaced by *purely diaphragmatic breathing*, death will speedily follow if artificial respiration be not resorted to, for the purpose not only of clearing the lungs of chloroform vapour, but also of *facilitating the pulmonary circulation*; and artificial respiration, when required, should be continued, even although all evidence of cardiac action has ceased. Movement of the diaphragm, or even of the chest wall, is not sufficient evidence that respiration is being carried on properly. *The sounds of respiration should be heard or the breath felt.*

3. When a more or less sudden fall in arterial tension takes place, artificial respiration should be employed *for the purpose of sending more blood to the left side of the heart*; at the same time the brachial and femoral arteries should be compressed, so as to limit the distribution of arterial blood. The head and trunk should be lowered, to facilitate the flow of blood to the brain.

4. In cases of apparent death from chloroform, or when the patient is in imminent danger, it might be advisable, in addition to the means already mentioned, to introduce an electrode into the pericardium, for the purpose of directly stimulating the heart.

XVI.—BY DR. HECTOR C. CAMERON.

GENTLEMEN,—I had not originally contemplated taking part in this discussion at all, and that not from any want of interest in the subject or of appreciation of its value, but simply from a feeling that, in a matter so trite, I was unlikely to add anything of much value to the common outcome of the discussion. But as it has proceeded, I have thought that perhaps it is my duty to detail to you the circumstances of two deaths on the table which have happened in my own experience, one of these being undoubtedly due to chloroform, while the other occurred apart from, and might probably have been averted by, its use. Before proceeding to do this, however, there are one or two points raised in the discussion to which I should like to refer very shortly. And, first of all, I wish to add my voice to that of some who have preceded me, in deprecation of the wave of pessimistic opinion which seems at present to be passing over men's minds in reference to fatalities from chloroform. We owe it as a duty to the public, not merely to inform ourselves, by every means, as to how chloroform may be given with the least possible risk, but, in view of the keen anxiety and exaggerated sense of danger with which most patients submit to be anæsthetised, we equally owe it to them to maintain as confident an attitude as is justifiable. Every patient in prospect of an operation, asks, "And do you think it is quite safe for me to take chloroform?" and he listens to the reply with an interest and anxiety as critical and as keen as attaches to any estimate submitted to him of the importance and dangers of the operation. To such a question I am often in the habit of replying that the risk is probably not greater than is incurred in going up to London and back again. Some such

familiar and concrete illustration of the fact that we all daily face known risks without anxiety, or rather that we daily run risks in our business, our travelling, and our amusements, which are very real and even capable of statistical calculation, without concern, is often reassuring. That it is justifiable, is borne out by considering how seldom, after all, a fatality occurs in chloroform administration, in proportion to the vast number of cases in which it must be used. If we reflect how many persons, all more or less diseased, many within a measurable distance of death, are chloroformed in a great city like ours in the course of twenty-four hours; if we add to that number those similarly treated in other large towns, as well as throughout the country generally, and multiply the days into weeks, and the weeks into months, and reflect how few fatalities occur in a year, in proportion to the very extensive use of the agent, I think we must marvel, not that deaths occur amongst the diseased and injured persons dealt with, but that a substance should ever have been discovered, under whose influence so much can be satisfactorily accomplished with so little of fatal accident. The speculation has been indulged in the course of this discussion, that some day a local anæsthetic may be discovered which will supercede the necessity of producing general anæsthesia. I neither expect this nor desire it. Very little consideration will convince us that no surgeon would be disposed to perform the operations which we now-a-days must perform, in the full consciousness of his patient. Who would like to face an operation of two or three hours' duration—to meet the surprises that fall to every man's lot in such work as abdominal section; to discuss with his colleagues and assistants the necessity for altering his plans, or even for desisting from further procedure in view of unexpected revelations, if his patient were the most interested and excited of all his spectators and auditors? At present, not only is the patient's feeling gone, but his eyes are blinded, and his ears deafened; and the reply made by a well-known surgeon to a medical man who expressed the hope of our some day being in possession of a local anæsthetic of universal application was a just one. "But don't you think," he said, "it's a grand thing to be able to operate without the patient being present."

I have used both chloroform and ether extensively, and, not infrequently, both in the same case, for I often begin with chloroform and change, if it seems desirable, to ether. When the operation is very protracted and faintness threatens, I often do this with apparently great advantage. The question

as to whether the chest should be examined before the administration has been adverted to in this discussion. This may, perhaps, be justifiable in cases in which the operation is merely one of convenience, or one in which an anæsthetic may be dispensed with in the event of the examination indicating danger. But, where the contemplated procedure is inevitable, and an anæsthetic must be administered, an anxious examination of and consultation as to the state of the heart is undesirable, since its effects are apt to be far from beneficial to the patient. I have often had occasion to operate in cases where severe valvular disease of the heart existed, and I have seen no bad effects from the chloroform, which I would always prefer in such cases to ether. A year or two ago I had to deal with a large and growing sarcoma, connected with the sciatic nerve of a young lad, who had a loud cardiac murmur, like the purring of a cat—the result of rheumatic fever. I received a letter from a well-known surgeon in London, whom he had consulted, practically advising that the lad should be abandoned to his fate, in view of the great danger of administering an anæsthetic when the heart was so seriously diseased. I operated, his relatives accepting full responsibility in the matter; and, from first to last, he took the chloroform as kindly and as well as anyone could, and he continues to enjoy good health, I believe. This case raised a difficulty which surgeons have often to face; but to say that a patient must be abandoned to a painful or fatal disease, lest he die under an anæsthetic, seems to me like saying that we may not attempt the rescue of a drowning man lest in the effort we injure him fatally against dangerously projecting rocks.

On one point I must criticise the practice of Sir George Macleod as stated by himself, and I am sure he will not misunderstand me. He tells us that he administers the chloroform himself until anæsthesia is complete, when he deposes the duty to some one else, believing the dangerous stage to be over. But is this belief in accordance with the facts of the case? I think not, and if a death were to take place after such change has been made, the plan adopted would inevitably lead, at least in the popular mind, to a comparison being drawn between the competency of the earlier and the later administrator, to the detriment of the latter. A captain often steers his vessel with his own hand through an intricate and dangerous channel, and then hands over the duty to a subordinate, who has a clear sea in front and has only to keep the vessel on a prescribed course—but there is no

analogy between such a case and that under consideration. In chloroform the intricacy of the channel is with us from beginning to end. Death takes place late as well as early, and Dr. Buchanan has mentioned to-night—what has often been recorded—a fatal result occurring not merely in a late stage of anæsthesia, but actually at a time subsequent to the patient having recovered consciousness and having exchanged remarks with those around her.

The two fatalities which I will narrate illustrate respectively the occasional danger of withholding, and the equally occasional danger of administering an anæsthetic. The first of these mishaps I have already published. It occurred many years ago, when I was one of the surgeons in the Royal Infirmary. I had occasion to make an incision in the leg of an old soldier, and, as he was very bronchitic and feeble, I persuaded him to dispense with chloroform. The moment the incision was made he screamed aloud, gave vent to a volley of oaths, and almost immediately there followed a few noisy and irregular respirations, sudden pallor, and death. A *post-mortem* examination revealed nothing beyond the evidence of old bronchitis, dilated heart, and advanced granular disease of the kidneys.

The other case was that of a woman brought from the country by her medical man, with a view to advice as to an ulcer in the vagina supposed to be carcinomatous. She firmly resisted being examined without chloroform, and had asked her own doctor to accompany her in order to give it, a previous examination having caused great suffering. Early in the administration struggling commenced, and every muscle in the body, including those of the head and even of the eyeballs, seemed to participate in the epileptiform contractions. At this stage I turned aside to get a speculum, when the doctor called out to me that she had ceased breathing. As a matter of fact she had died, and no pulse could be felt at the wrist, although she gave two or perhaps three deep respirations or sighs, separated by long intervals, afterwards. All our efforts to restore breath and heart's action were unavailing, although continued until both of us were exhausted. The manner of death in this case seems to me to bear out what was referred to by Dr. Kirk in the early part of this discussion, the danger, namely, of disorderly action being aroused in the heart muscle; so disorderly and unrhythmical as to bring its action to a sudden standstill. That this *delirium cordis*, or stammering, or inco-ordinate faction of the heart, or whatever else we choose to call it, is not an unlikely explanation

of the fatality, may be gathered from the fact that it occurred with great suddenness, in the midst of universal spasms and twitchings of all the external muscles of the body, including those of respiration. It requires no great stretch of the imagination to suppose that the same disorder and spasm may have been aroused in the muscle of the heart. I have never since permitted chloroform to be given under similar conditions in any case for which I was at all responsible. This woman lay down with all her clothes on except her bonnet, the tighter parts of her clothing being loosened. She had just come by railway from the country; had, I believe, walked from the station, and seemed warm and even perspiring. Unless in emergency, I feel it is our duty to anæsthetise no patients who have not been at repose since the previous day at least. I never operate on cases, other than those of extreme urgency, on the day of their admission to Hospital or Nursing Home. The deaths from chloroform in the out-door departments of hospitals and in dentists' chairs are generally supposed to be disproportionate in number to those of in-door practice, whether in hospital or at home. The difference in the circumstances of the two cases is certainly very great, and may explain any difference which exists in the liability of each to mishap.

There is another form of danger with which we all frequently meet during chloroform administration, viz., profound syncope and corpse-like pallor, occurring with some suddenness, during an operation. It generally declares itself at a time when the patient seems not to be too completely under chloroform; and I am in the habit of speaking of this alarming condition as one of suppressed or ungratified sickness, since, sooner or later, vomiting supervenes, the face is flushed, the radial pulse returns, and our fears are over. While this state lasts, however, it is sufficiently alarming, and no doubt perilous, and I often see it in children as well as in adults. Had time permitted—and I know I have already exhausted the time prescribed to me—I could have wished to refer to some points connected with chloroform-giving at various ages, and in operations on various organs and regions. In the extremes of life, chloroform I believe to be much safer than ether; and I have used it in such operations as that for imperforate anus within a few days of birth, while some years ago, I removed, with the assistance of Dr. Abraham Wallace, and under the influence of chloroform, a carcinoma from the cheek of a lady who had entered her ninety-fourth year. In all these cases I have found its effects to be most satisfactory.

As regards the special risks of special regions of the body, these are for the most part apt to show themselves when an operation is in progress on highly sensitive parts, and the patient is not fully anæsthetised. In none of our common operations do I see troublesome and even alarming faintness more frequently than in those undertaken for removal of the mamma; and I am convinced that I have noticed the occurrence more often, and have found it more prolonged, in cases where the left mamma was the subject of operation. If time permitted, I could give chapter and verse for this statement; could adduce clinical experiences in support of it. Nor need we greatly wonder, I think, that this should so happen. If a blister, belladonna plaster, or hot application over the heart, can have any effect on its action, is it to be wondered that the cutting, and subsequent handling and sponging of the raw quick surface, within a very short distance of the cardiac apex, should produce a marked and dangerous effect on the cardiac action of a patient not profoundly anæsthetised—in the way of slowing and enfeebling it?

XVII.—THE ADMINISTRATIONS AND DANGERS OF ANÆSTHETICS.

By JAMES DUNLOP, M.D.

MR. PRESIDENT AND GENTLEMEN,—I ask you to accept as my contribution to the discussion this reprint of an article which appeared recently in the *Lancet* * entitled "Observations on the Administrations and Dangers of Anæsthetics." As you are aware, following up the theoretical and highly speculative opinions of the Hyderabad Commission, the *Lancet* has conceived the idea of collecting a series of clinical facts relating to the effects of chloroform and other anæsthetics on man, with the view of arriving at some definite conclusions regarding their respective value and safety. With that end in view schedules have been issued to many hospital surgeons and others, requesting them to reply to certain questions put before them. To these questions, like some of my colleagues in the Royal Infirmary, I sent replies, and these have formed the basis of the paper now put in.

I look forward with no little satisfaction to the results of the *Lancet* enquiry, which, I trust, will give repose to many

* See *Lancet*, 27th September, 1890.

troubled minds on the subject of chloroform as a safe anæsthetic, and will be an answer to the advocates of the use of ether, who, like Ormsby, the inventor of the improved ether inhaler, declare that it is almost criminal to employ chloroform as an anæsthetic, when we have such an easily administered and equally powerful and much safer agent in ether. With such exaggerated and extreme views I have little sympathy. With your permission, sir, I shall make a few additional observations.

Those gentlemen who have done me the honour of reading the article will have noticed that no reference is made to any *post-mortem* examination of a patient who had died when under the influence of ether.

The explanation of the omission is not far to seek. Although there have been several deaths during the administration of ether reported from the south of the Tweed, there has been no death in like circumstances in the city of Glasgow.

Another reason for the absence of any such deaths is to be found in the fact that, relatively to chloroform, ether has been and is little used in surgical practice amongst us, and our experience of its effects, both during and after its administration, is exceedingly limited.

Whether ether is to be debited with deaths from pneumonia, bronchitis, or both, due to the action of the anæsthetic, aided by faulty and imperfect methods of administration, is a question yet to be decided. Such deaths are not made the subject of official enquiry by the Crown; they fall rather to be enquired into either by the private practitioner or by the pathologist of the institution in which the death may have taken place.

There is a point connected with remote deaths from chloroform to which I would refer, not that I have had any experience of such deaths, but more by way of directing the attention of the Society to the subject. It is stated that every now and then surgeons find patients upon whom they had quite recently operated dying suddenly and unexpectedly. It is further stated that the cause of death in such cases is acute fatty degeneration of the muscular fibres of the heart, due to the poisonous action of the chloroform. This, too, is a subject worthy of enquiry. Regarding it, I may remark here that, when we reflect upon the fact that such sudden deaths are few, while the number of administrations of chloroform without any bad effects whatever amount to many thousands, it is unreasonable to debit chloroform with the production of such a serious pathological condition as fatty degeneration of the heart.

I do not suppose that pathology has yet reached the position of an exact science, or that pathologists can predicate with even an approach to accuracy the time when the fatty changes begin in the heart which lead up to the fatal result. If fatty degeneration of the muscular fibres of the heart was a condition likely to be produced by the toxic action of chloroform, I fear the mortality immediately after operations would be appalling.

As the President, I understand, has mentioned to the Society, though in an informal manner, the matter of certain proposals for the safer administration of anæsthetics which are about to be considered by the Crown authorities in Edinburgh, and upon which I trust the discussion in this learned Society will throw valuable light, I may, I think, without any breach of official decorum, say a few words on this part of the subject.

It is true that the official mind in Edinburgh has been greatly exercised—greatly disturbed too, by the reports which have reached them from medico-legal inspectors, of sudden deaths under the administration of chloroform—deaths under exceedingly painful and unpleasant circumstances for all concerned—both in Glasgow and elsewhere.

As the Crown officials are in a way the custodiers of public safety and responsible to the Crown, they are neither to be blamed nor censured for taking such action or making such recommendations as they are advised may conduce to the safety of the lives of the lieges.

It is not my intention to enter into any detail of the reported cases which led to this line of thought on the part of the officials of the Crown. To do so would not only be impolitic, but hurtful to the feelings, and might mar the reputation and diminish the usefulness of many valuable members of the profession.

But, gentlemen, for the protection of the public some line has to be drawn, and it is for this Society, by its deliberations, to assist in fixing the points between which the line is to extend.

Before you can feel warranted in wrapping yourselves round as with a cloak of integrity, and casting your eyes with reverence up to heaven, and thanking God that you have never had a death from chloroform in your practice, you must admit that in anæsthetising a patient you are performing an important and highly responsible operation—that the tools with which you are working are double edged—powerful for evil in certain conditions as well as for good—that your attention is to be undivided—that you exercise skill, care, and

judgment, which I am sorry to have to admit are sometimes wanting, hence the painful results of which we occasionally hear, and which bring discredit on the profession. What, Mr. President, is to be said of a case in which a lady, in giving birth to her first child, attended by a physician and a skilled nurse, has chloroform administered from time to time by him, to blunt the acute agony of the uterine pains? Most commendable this, for the relief of human suffering is one of the highest functions that the gentle and skilled physician is called upon to discharge.

But the physician, with implicit and unbounded faith in the absolute safety of chloroform, getting wearied, entrusts the administration of the occasional whiffs of the anæsthetic to the nurse, who, while under his eye does it well and safely, but in a short absence, while he is taking a little rest in an adjoining room, something happens; on entering the room, the atmosphere of which is loaded with chloroform vapour, he is assured that the lady called for chloroform—more and more—and on examination he found his patient quiet, very quiet, in a sleep which knew no waking. Can it be wondered at that the friends of the deceased clamoured for the law? “You put,” said the husband, “signalmen and engine-drivers in the dock for neglect of duty, errors in judgment which lead to collisions and loss of life. Why do you not put the doctor and the nurse on their trial for like errors of judgment and culpable neglect? Why should they be treated differently from signalmen?”

To resume. The Crown authorities in their perplexity seek advice. They consult the President of the College of Surgeons of Edinburgh, a man of the highest intelligence, and of great experience and authority as a surgeon. He draws up a set of recommendations, which I shall read to you, but before putting them before the authorities for adoption, like a prudent man, he seeks the help and advice of his professional brethren. He sends copies of his recommendations to medical men far and wide for their opinion on his rules. They are as follows:—

“It is believed that if certain rules regulating the administration of anæsthetics were generally adopted in public institutions, it would lead to greater safety both there and elsewhere. The following are suggested:—

“1. Anæsthetics should be given in the presence of two registered practitioners, one of whom should give special attention to the administration.

“2. The administration of an anæsthetic should be regarded in the same light as the performance of a surgical operation.

Every effort should therefore be made to ascertain beforehand the past history and present condition of the patient, especially points bearing on the administration.

"Thus, the facts as to previous administration should be known, and the details of illness that might influence the administration, such as those affecting the heart or lungs. The various organs should be examined. The absence of artificial teeth, and whether the patient has recently taken food, should be ascertained.

"3. It is evident that much must be left to the judgment of the individual practitioner who, knowing that no anæsthetic can be given without risk, must necessarily decide whether the risk of delay for the purpose of making a complete examination, or the risk of immediate administration is the greater. To him also belongs the determination of the propriety of anæsthetising and the nature of the anæsthetic."

It is for you, learned and experienced gentlemen, to give these rules your consideration.

To recommend their adoption as they stand, would be no hardship to most surgeons in public institutions or hospitals, for whose benefit they are especially intended, and if their adoption were the means of diminishing the preventible deaths from chloroform, while its inestimable blessings were not curtailed, much good might result to the public safety, but their adoption in town and country practice would not only be utterly impracticable, but would add greatly to suffering and danger to life.

XVIII.—SPECIAL REMARKS ON ETHER.

By MR. H. E. CLARK.

MR. CLARK said that he was one of those who believed that ether had never had a fair trial in Glasgow. He had himself administered ether for years spasmodically, irregularly, and on wrong principles, and had not been satisfied with it. At the Leeds meeting of the British Medical Association we had been taught a lesson; and since that meeting he trusted that many had been taking up ether and learning its merits and advantages. Ether had the peculiarity, as an anæsthetic, that a very great deal depended upon the mode of administration. He took exception to the formidable list of cases read out by Sir George Macleod, in which it was alleged that it could not be used. In many of the cases therein named it could be used quite well. He had been learning how to

administer it, and had done so with excellent results. With ether he had never seen such cases of extreme struggling as Sir George Macleod had described; he had seen no disagreeable sickness, and no dire after results, as regards inflammation of the bronchial tubes and pneumonia. Mr. Clark repeated the rules for its administration, as stated by Dr. Hartley, and alluded to the small quantity of the agent necessary to produce the required effect. He described a case in which Dr. Hartley had administered ether for him, where there was dilated and hypertrophied heart, chronic bronchitis, and inguinal hernia; there had been no sickness and no disagreeable symptoms. The question whether it was advisable to instruct their students in the administration of anæsthetics was of importance. If they were to turn men out, legally qualified, who had not received practical instruction in the hospital, how could they expect such men to give anæsthetics in labour and in minor surgical operations in practice? Such a course was dangerous, and would lead to dire results. Sir George Macleod looked with hope to utilising the proposed fifth year of study for such instruction, but the same technical objection would apply to fifth as to fourth year's men—viz., that they were unqualified men. In every hospital some man—not the surgeon, whose hands were already full—of wide experience should give practical instruction, and a certificate should be given that the student had been instructed in the administration of anæsthetics and was competent to administer them. As regarded the suggested Crown regulations, read by Dr. Dunlop, there were several objections to them. First, they would tend, by placing the surgeon under a mechanical system of rules, to lighten his sense of responsibility. His duty would be performed if he conformed to the rules. Then, again, the third rule, if put into force at all, would supersede to a great extent the other two. In reference to the examination of the organs before anæsthesia, he held that to be essential. They could not have too much light on all sides of the question. They could never hope to learn the essential conditions of safe anæsthesia if they left unexplored the condition of the organs of the patient. With the mind of the operator ignorant on this matter, he must look upon the giving of anæsthetics as controlled by a fate which might be beneficent, but which might also be the opposite, just as the multitude in Greece and Rome regarded their divinities. The present discussion would stimulate him to keep a more exact record of his cases than he had hitherto done. He happened to have

four cases of death under chloroform, the anæsthetic being administered not by himself but by his house surgeons. In all these cases the fatal result took place at the late stage of the inhalation. He had also been called on to assist in cases, in the wards of his colleagues, in which death occurred during the administration of chloroform, and in some of these the catastrophe took place in the early stage of the administration. In neither of his cases was there any lesion of lung, or heart, or kidney. As to the mode of death, he could not speak of the earliest case; the second and third died from cardiac syncope; the fourth from asphyxia.

XIX.—ANÆSTHETICS IN DISEASE OF THE HEART.

By DR. ALEXANDER ROBERTSON.

DR. ROBERTSON said that as a physician he had not intended to intervene in the discussion, but he felt constrained to enter his dissent from some remarks which had been made on one point. It had been said that there was no use in examining the heart. To that he demurred. He did not dispute that there were diseased conditions of the heart which might be no bar to the administration of chloroform. A number of years ago, when he used to operate, he gave chloroform in a case in which the patient took the anæsthetic well. The man died from other causes, and his heart was found studded with vegetations on the mitral valve. But though he held that in some valvular diseases of the heart there might be little risk, he believed that in others the risk was great. In cases in which there was aortic regurgitation, and also if there were disease in the wall of the heart, chloroform might do injury, the action of chloroform being to depress the heart's action; and if, as happened in aortic disease, the action of the organ was already slow, it might cease altogether. In disease of the wall of the heart it seemed to him attended with much risk to give chloroform; ether would probably be safer, though there would be special risks from over-stimulation.

XX.—ANÆSTHETICS AT THE CHILDREN'S HOSPITAL.

By DR. NESS,
Royal Hospital for Sick Children.

It had been suggested to Dr. Ness that he might place before them some information regarding the administration of anæ-

thetics in the Children's Hospital. Since the institution was opened in the beginning of 1883 till now, the practice had invariably been to give chloroform; only in exceptional cases was ether used. During that period no death had occurred during the administration of anæsthetics. The only possible exception that could be taken to this statement was in the fact that a child was some years ago admitted in a moribund condition with diphtheria, and before tracheotomy could be performed the child died. That was not a death due to the administration of chloroform. There were notes of 1,080 cases during the whole period. No record, however, was kept of dressings and examinations under chloroform. Taking these into account the number could be safely doubled. This would make an approximate estimate of 2,160. These numbers were intra-hospital cases, and did not include dispensary cases.

XXI.—ANÆSTHETICS IN PRACTICE.

By DR. WALKER DOWNIE.

As far as the discussion has gone, the question of the relative value of various anæsthetics has been to a great extent ignored, and the majority of speakers have been content with making comparison between ether and chloroform. Possibly, from a practical point of view, it is well that attention has been centred on those two. Of general anæsthetics, ether and chloroform are the only ones of which I have had experience. Ether I have administered to a limited extent only, and that by means of the cone, made with a folded towel covered with jaconette, and having a sponge fixed at the apex of the cone. When thus employed, it took a longer time to place the patient under its influence as compared with chloroform. It was distasteful to the patients, frequently caused troublesome coughing in the earlier stages of anæsthesia, and the after effects were very similar to those following the use of chloroform—*i.e.*, after-sickness was not unknown. Chloroform I have administered very many times, and almost always by means of the folded towel, as taught by Sir George Macleod and Dr. Patterson, that is by applying the chloroform *freely* in contra-distinction to its administration by drops. And although, like some other speakers, I have had "frights," yet I have never seen a death occur from or during its administration.

To fortify one's self against those "frights," it is the duty

of every one who administers an anæsthetic to know what to do when dangers arise, and to be able to act without delay. It is not my intention to go over the various dangers which may arise during the administration of chloroform, but I wish to refer to a method of treating those who are deeply or dangerously narcotised by chloroform, which method was shortly referred to by some previous speakers. And by your permission I shall read a case given in detail in the "Story of the life of Dr. Marion-Sims," and which, when I read it some five years ago, deeply impressed me, and the knowledge of which encouraged me to continue my efforts at restoration, and to a successful issue, in a case where the patient was believed to be, and said to be, dead by several house-surgeons around me. The child had all the appearance of being dead: breathing had ceased, lips were blanched, and no pulse could be felt, and without the knowledge of Marion-Sims' case I should have left the patient alone. As it was, it took close on two hours before the child was restored to consciousness. The case then read was that of a young lady with exceedingly bad vesico-vaginal fistula, on whom Dr. Marion-Sims was requested by Dr. Nélaton to operate in Paris. The patient was placed under chloroform by a well known Parisian physician of high reputation for administration of chloroform. At the end of forty minutes, when all the sutures were introduced and ready to be secured, suddenly both respiration and pulse ceased, and the patient had all the appearances of being dead. Dr. Nélaton, however, directed the head to be lowered and the body inverted, that is, the head to hang down while the heels were raised in the air by one of the surgeons, the legs resting one on each of his shoulders; the tongue was pulled out, and efforts at artificial respiration were employed. The patient was held in this inverted position, and artificial respiration was continued for close on twenty minutes, and so useless did the efforts appear to Dr. Marion-Sims, that he remarked to Dr. Nélaton, "Our patient is dead, and you might as well stop all efforts." But they were continued, and "at the end of that time there was a feeble inspiration, and after a long time another, and by and by another, and then the breathing became regular. When the pulse and respiration were well re-established, the patient was cautiously laid on the table; but the moment the body was placed horizontally, the pulse and breathing instantly ceased." The body was quickly re-inverted, and the same manœuvres as before were put into execution. It took nearly as long to re-establish the action of the lungs and heart as in the first instance: respira-

tion at first irregular, and at long intervals soon became more regular, and the pulse, feeble and intermittent, became stronger and more regular, and she was then placed on the table a second time. But the moment the body was placed in the horizontal position the respiration ceased for a third time, the pulse was gone, and she looked the picture of death. Inversion of the body and the other methods adopted to restore suspended animation were again quickly resorted to. Dr. Sims thought she would never breathe again, but at last there was a spasmodic gasp, and after a long time another, and after another long interval there was a third, and a fourth, then a long yawn, and respiration became tolerably regular, and she was kept in the inverted position until she became conscious.

Dr. Marion-Sims then goes on to say—"I believe this case goes as far to establish the proper method of resuscitation from chloroform narcosis as anything possibly can. If the recovery had been complete and perfect with the first effort at reversing the body, there might have been a doubt whether the vertical position was really the cause of resuscitation; but when the horizontal position was again and again followed by the cessation of all signs of life, and when life was again and again re-established by a process that favoured gravitation of the blood, poisoned as it was with chloroform, to the brain, the inference is very clear that death in such cases is due to syncope or cerebral anæmia."

Then, regarding the proposition that no anæsthetic should be administered except in the presence of two qualified practitioners. If such a proposal was sanctioned by Parliament, and the law was extended to private practice, many difficulties would at once be encountered. The question of practicability, which would be most severely tested in remote country districts, where a second medical man could not be available in numerous cases of emergency, and where thus, a man anxious to alleviate suffering would act illegally in administering an anæsthetic by himself, would require to be carefully considered. Then the question of remuneration would arise. By whom is the second medical man, whose presence would be rendered necessary by law, to be paid? Many would rise up in arms against what might, in many cases, appear an unnecessary expense. Such would form an endless source of annoyance, and would lead to the attempting of work without anæsthetics, which is presently performed safely and satisfactorily by their aid, rendering such alike painful to the patient and unsatisfactory to the surgeon. Personally, I can say that I care not for what purpose an anæsthetic is given, it

is a very great source of comfort to have a medical friend to share the responsibility, and I think the feeling is so general that, when feasible, a brother practitioner is usually present, without interference on the part of the law.

XXII.—ANÆSTHETICS IN OBSTETRIC PRACTICE.

By DR. SAMUEL SLOAN.

THE more experience I have of chloroform in obstetric practice, the safer and the more valuable do I consider it. I now administer chloroform, to the obstetric degree, in nearly every case of confinement I attend: the length of time the patient is under its influence depending on the nature of the case. I have kept a lady seven hours under it, and I once received unbounded gratitude from a lady who could not have had it more than as many seconds. The method I now resort to is, to pour a few drops on to a crushed handkerchief placed in a dry tumbler, which is held near the patient's mouth. Sometimes it is given to the patient herself to hold at first, partly to give her confidence; usually it is held by the nurse. If the patient is in the second stage of labour and the pains are almost continuous, the chloroform is administered almost continuously, but is not given to the surgical degree; this being reserved for very serious and prolonged operations. Indeed, in what may be called minor obstetric operations, such as the application of the forceps at the outlet or low in the cavity, I am in the habit of removing the chloroform entirely before beginning such operations, because the muscles are apt, under this degree of chloroform influence, to be rigid, and the patient, whilst sufficiently under the drug to be free from conscious pain, is not sufficiently under it to be passive, and is yet too much under its influence to be able to control her movements. The chloroform seems here to be more of a hindrance than otherwise, bringing on reflex spasm of the vagina and hysterical restlessness as soon as the necessary manipulations are attempted. Dr. Barnes, who refers to this result, concludes that we are therefore justified then in pushing the chloroform to the surgical degree. I, on the other hand, find it easier for myself and safer for the patient to withdraw the chloroform completely under these circumstances, as I have mentioned my practice to be. And fortunately, the patient does not suffer much by this withdrawal, since I find that,

though no more chloroform is administered, the first time the patient fully recovers consciousness is when she hears the child cry ; having been, I believe, almost free from suffering in the interval. I never examine as to a patient's fitness for chloroform ; and, given to this extent, I cannot recall a single case of after mischief attributable to it, not even I think a single case of sickness. *I consider the recoveries more likely to be good than the reverse where chloroform has been judiciously given.*

Previous speakers have spoken on the question of having another doctor present during the administration of chloroform in confinement. Now, in the cases I have been referring to, such a practice is obviously unnecessary. On the other hand, in cases, say, of obstructed labour requiring severe operative measures, or in turning, with the uterus in a state of tonic contraction, I make sure that chloroform is given to the full extent and by the hands of a fully qualified medical man. Under these circumstances, though I never saw a patient in great danger, I have twice had something of a fright. Of course if I could not obtain the assistance of a doctor without dangerous loss of time, I should simply have to do the best I could without him.

XXIII.—DR. M'CONVILLE.

DR. M'CONVILLE's experience of chloroform extended over 30 years, during the last 15 of which he had used it largely. He had given it extensively, with the object of shortening the period of labour, and the other incidents in the work of a general practitioner. He had not felt the difficulty referred to in the discussion as to the presence of a second practitioner. He had never had any hitch of any kind in an experience extending perhaps over 4,000 cases.

XXIV.—DR. N. CARMICHAEL.

DR. CARMICHAEL thought that the present scare as to the use of anæsthetics was uncalled for by anything which had occurred. It was wonderful that the accidents were so very few. For the general practitioner, it would be a serious thing indeed if the wave of distrust should eventuate in any permanent diminution in the practice of anæsthetisation. If that were the case, many patients who at present escaped

suffering would be permitted to suffer; and probably the deaths from shock would be equal to those from anæsthetics. He thought it would be a calamity if it were decreed by public enactment that two men should be present at the administration of anæsthetics in hospital, while the general practitioner, in private practice, should continue to bear the undivided responsibility. Such a position of matters would necessarily injure the practitioner in public estimation, should any accident occur. The fact that the responsibility rested on the shoulders of one man, as now, was sufficient guarantee that he would take the greatest possible care in giving the anæsthetic. This did not do away with the desirability of having a second man to help him when he could be had.

XXV.—DR. M'GREGOR-ROBERTSON.

THE following letter was read:—

“DEAR DR. MACEWEN,—I am sorry that I shall be unable to attend the Med.-Chir. meeting this evening, circumstances having arisen requiring my presence in Edinburgh this afternoon at 5.45. I shall probably not return till the morning.

“I wished to speak at the meeting to-night on one point only. All the speakers I have heard, in referring to the cardiac arrest early in the administration of chloroform, before it was possible for toxic effect to be produced, referred to that arrest as ‘syncope,’ or ‘paralysis,’ or ‘failure.’ I think this mode of designating it begs the question. The suggestion I wished to make was, that it may be due, not to cardiac paralysis, but to *cardiac tetanus*, due either to reflex stimulation, and effected by the intrinsic ganglia, or, it is possible, to direct action on the ganglia themselves of the chloroform in the blood. I have tracings showing the action of chloroform, ether, ethidene, and ethyl bromide, on the isolated heart of the frog, fitted on the frog-heart apparatus. In the case of chloroform, this sudden cardiac tetanus frequently occurred with the frog-heart, either immediately on the entrance of the drugged blood into the heart, or on the sudden substitution of a stronger for a weaker percentage. This tetanic state was either complete or partial; when partial, a feeble peristaltic wave, rhythmic, passed over the heart (which meanwhile, however, was contracted round the canule), and was recorded as a small curve on the paper. With ether this occurrence

happened very rarely, but it did occur once or twice, only, however, at *the very outset* of the experiment and with the first entrance of the etherised blood into the heart, and it quickly passed off. Thus, arguing from these experiments, the tracings of some of which I send, cardiac arrest may occur (under chloroform or ether)—

“1. As a result of tetanus, at the outset of the administration, due to sudden stimulation ;

“2. As a result of paralysis, late in administration, due to toxic effect of the drug.

“I have taken the liberty of communicating to you the leading idea of the remarks I wished to make to-night, and trust you will overlook the hasty way in which I have set it down. With regards, very faithfully yours,

“J. McGREGOR-ROBERTSON.

“GLASGOW, 31st October, 1890.”

XXVI.—THE PRESIDENT.

THE PRESIDENT stated that, at that late period of the evening, it would be desirable to take the sense of the meeting, before any of the members left, on the question of a public enactment or departmental regulations, necessitating the presence of two qualified men at the administration of anæsthetics.

[The question was put to the meeting, which was large and representative of the profession in Glasgow and the West of Scotland, when it was unanimously agreed that no such legal enactment was required, and were any such enacted it would in many cases be prejudicial, and even dangerous, to the patient.]

XXVII.—DR. STIRTON.

DR. STIRTON said that, in the discussion so far as he had heard it, there had been no attempt to bring out whether it was possible to arrive at any conclusion as to what part of the nervous mechanism was at fault in the production of heart syncope. He had seen one fatal case himself, and, looking back on the history of that case, he felt very forcibly that whether the sympathetic system was diseased or not, it had something to do with the death. He had a strong suspicion that there existed some peculiarity in the heart's action. As

to the rôle of chloroform in obstetric practice, he was of opinion that it had, in the discussion, been represented too much *couleur de rose*, and that in investigating such a subject something more than platitudes was required. The speakers must have known that there existed accounts of cases in which evil effects had followed; he had himself seen such cases. Chloroform was occasionally accountable for post-partum hæmorrhage; for the formation of intra-uterine clots, sometimes of enormous size.

XXVIII.—DR. LAPRAIK.

DR. LAPRAIK suggested that it should be remitted to a committee of the Society, or to the Council, to bring up a series of recommendations, based upon, but not necessarily limited to the points brought out in the discussion, and the general sense of the meeting on these points, as elicited by the discussion.

XXIX.—THE PRESIDENT'S CONCLUDING REMARKS
ON ANÆSTHETICS, WITH SPECIAL REFERENCE
TO CHLOROFORM AND ETHER—THEIR PHYSIO-
LOGICAL ACTION, THEIR RELATIVE VALUE,
THEIR DANGERS, AND THEIR MODE OF AD-
MINISTRATION.

GENTLEMEN,—It has fallen to my lot, as President of this Society, to perform the somewhat onerous task of making the concluding statement on this discussion on anæsthetics. Whatever may be the outcome of this discussion, those who have regarded for three nights in succession the large audience assembled in this hall, must have been convinced that the profession have an intense interest in the subject of anæsthesia, and have shown a manifest desire while extending that inestimable blessing, the alleviation of pain, to do their utmost to secure the safety of the patient.

The subject has been discussed from two distinct stand-points, that of the physiological experimenter, and that of the clinical observer. The majority of speakers have confined their remarks to either one or other of these sides. It ought not to be forgotten that both must draw their conclusions from physiological phenomena, the one supplied by the lower animals, the other by man. The experimenter on lower

animals has the advantage of making direct and exact observations graphically recorded, which, however, are sometimes vitiated by the necessary interference with the functional subtleties of the complex mechanism embodied in animal life. The surgeon is often content with the consummation of complete anæsthesia, without analysing each step in the process by which it has been obtained. The evanescent nature of the phenomena render the clinical observer doubtful on many points which he is debarred from settling by an appeal to direct experiment. Such can only be ascertained clinically by retaining in the midst of abundant experience a sufficiently receptive and retentive mind, which, while noting the constantly recurring phenomena, can detect the deviations from the normal, and the circumstances under which they occur.

Within a comparatively recent period, four reports have been issued on the physiological action of chloroform—that of the Glasgow Committee on anæsthetics; that of the Hyderabad Commission; that of Dr. M'Williams, of Aberdeen; and that by Dr. Kirk, on primary shock under chloroform. From a perusal of these reports, it is clear that the observers have not come to a unanimous finding; they differ from one another in many important points.

The most prominent of all the reports is that of the Hyderabad Commission. One cannot help expressing admiration at the princely generosity of the Nizam of Hyderabad in issuing the chloroform Commission. His act evinces deep human sympathy, guided by the intelligent appreciation of a cultured mind, and is well worthy of imitation.

Let us look briefly at a few points discussed in these reports, and in doing so, attention is directed to, first, the diminution of blood pressure; second, the causation of primary syncope.

BLOOD PRESSURE DIMINISHED.

All are agreed that under chloroform blood pressure is diminished, though they are not equally so as to the cause of this. Dr. Coats believes it due either to cardiac weakness, or to diminution of peripheral resistance, brought about by dilatation of the arterioles. Dr. M'Williams rather favours the latter view, regarding it as primarily due to a depressing influence on the vaso-motor system, leading to arterial relaxation, and, when very marked, is accompanied by pronounced cardiac dilatation. He reminds us that blood pressure records cannot be relied on as giving accurate information as to the state of the cardiac action; and shows that carotid

pressure can be easily raised by firm pressure on the abdominal aorta. The Hyderabad Commission report that chloroform causes a fall in blood pressure at a rate which bears a close relation to the degree of concentration of the anæsthetic administered. When given gradually, the fall is gradual; and if given concentratedly, the fall is more rapid; but, however concentratedly it may be administered, it never produces sudden death from stoppage of the heart.

Clinically, experience shows that in many, possibly the majority of cases, there is a fall in blood pressure, and this is marked where chloroform narcosis is prolonged. It is questionable whether this fall, if kept within bounds, is objectionable, and, in certain patients, it may be of advantage.

THE CAUSATION OF PRIMARY SYNCOPE.

This is a point over which physiologists are at variance. The Hyderabad Commission deny its existence as arising from the action of chloroform, though they admit it may arise from reflex action, or from shock, when the patient is not fully under the protecting influence of the anæsthetic. Dr. Coats, while believing that chloroform may directly cause primary syncope, attributes it to various causes, but mainly to reflex inhibition of the intrinsic cardiac ganglia. Therefore, though not ostensibly, he yet so far agrees with the conclusion of the Hyderabad Commission in attributing the primary syncope to reflex action. He believes, however, that chloroform has a direct influence in bringing this about, by removing the control of the higher centres, and so permitting the reflex centres to act with greater potency than they otherwise would do. Dr. M'Williams looks upon primary syncope as the direct outcome of the chloroform upon the heart, causing primary dilatation of all its cavities—auricles and ventricles on both sides. Dr. Kirk states that primary syncope never occurs from the action of the chloroform, but it may do so from the sudden withdrawal of the anæsthetic, once the patient is under its influence. Dr. Kirk thinks that chloroform has the effect of causing a retardation or stagnation of the blood in the vessels, and, when this effect has been produced, and the chloroform is suddenly withdrawn, the circulation resumes its normal rapidity and causes thereby a sudden emptying of the heart. He contends, it is not the strength of the chloroform, but its sudden withdrawal which occasions the mishap. Dr. Kirk's theory stands quite apart from the others; it has been argued with much force and skill, and from a polemical point

of view much might be said on it. The reasoning in support of the theory is purely deductive, and whether there be facts behind the scenes which would support the hypothesis, they have at least not been disclosed. Until the data are more fully supplied an opinion cannot be expressed on the subject. There can be no doubt that chloroform administration is suddenly stopped on many occasions without syncope following, and I am not aware of any case in which syncope arose from this cause. Nor is it the case that during chloroform narcosis, there is any retardation of the blood stream, at least perceptible to the naked eye. During operations there is abundant hæmorrhage, oozing from minute vessels, welling from veins, and brisk spouting from arteries, while the patient is anæsthetised. It is one of the advantages of chloroform that it does not check bleeding while the patient is under its influence, otherwise secondary hæmorrhage would follow when consciousness was regained. Secondary hæmorrhage is seldom ever seen now, whereas, before chloroform was introduced, it was common, as the patient often suffered from shock, causing the vessels to contract and to be hidden from the surgeon at end of operation; they were, therefore, not secured, and secondary hæmorrhage occurred as reaction set in.

Though Dr. M'Williams shows that the heart dilates from the action of chloroform, it is important to note his conclusion that notwithstanding this direct cardiac action, yet in the great majority of cases of chloroform collapse, the respiration stops before the heart action becomes entirely ineffective. In healthy animals the heart, though dilated, is quite able to play its part in maintaining blood pressure, which though low, is yet compatible with the continuance of life. Though the heart be dilated it is able sufficiently to perform its function and continues to do so until respiration is arrested. The cardiac change is not usually sufficient by itself to induce a fatal result; when death occurs, the depression of the heart is usually associated with vaso-motor and respiratory failure. He gives three cases however, in which the state of the heart nearly caused death, though artificial respiration, along with rhythmical contractions of the ventricles with the fingers, restored the animals. Dr. Coats agrees with the view, that the risks of early and sudden syncope is minimised by continuous and sufficient administration, and when it does occur it is less dangerous than the other form, inasmuch as it is reflex and leaves the heart intrinsically unaffected. "Artificial respiration when used early should always produce recovery in this case." The Hyderabad Commission state that collapse may be recovered

from, provided artificial respiration be commenced *within thirty seconds* from the time of the cessation of respiration.

So that, whatever diversity of opinion be entertained by physiologists regarding the causation of primary syncope, they are much nearer unanimity as to its prevention. They agree that careful continuous administration of the anæsthetic, with vigilant attention to the respiration, will, in the great majority of instances, prevent primary syncope. Let us look at some clinical experience as bearing upon primary syncope.

Primary syncope is exceedingly rare during the early stage of chloroform narcosis, but many accidents occur during the early stage of chloroform inhalations which are erroneously attributed to syncope. Accidents in the primary stage of chloroform inhalation generally occur about the period of "struggle." It is important to bear in mind that all accidents occurring while patient is under the influence of an anæsthetic are not necessarily *from* the anæsthetic.

THE PERIOD OF STRUGGLE IN CHLOROFORM ANÆSTHESIA : IS IT DUE TO ACCUMULATION OF CARBONIC ACID IN THE BLOOD ? AND DOES IT THROW LIGHT ON SOME FORMS OF PRIMARY SYNCOPÉ ?

From the manner in which chloroform is often administered, there is a period of struggle before the patient passes fully under the influence of the drug. The intensity of the struggle varies greatly, and seems to bear some relation to the mode of administration. Concentrated doses increase the struggle, while abundant dilution of the chloroform vapour permits the majority of patients either to escape it or to have it only in a very modified form. If an analysis be made of this stage of struggle, when it has assumed an intense form, it is seen that besides the violent contractions all over the body, it is accompanied by violent expiratory efforts, with little or absolutely no inspiratory ones. The aspect is one of suffocation, and so intense are the muscular contractions, it is often with great difficulty that the lower jaw can be prised open. If one has observed the pulse, he will perceive that just preceding this stage there is a rise in the arterial pressure, and it may be presumed (as one cannot examine the pulse, as a rule, during this stage of struggle) that this arterial pressure is maintained or greatly increased during this period of violent expiratory effort. Immediately after this period of struggle has passed, the patient is found to be fully anæsthetised. Occasionally, however, he is plunged into a deep state of coma, which passes

quickly into a highly dangerous condition. The muscles are absolutely limp, the reflexes abolished, the pupils widely dilated, the breathing shallow or suspended, the blood pressure reduced to zero—the pulse being imperceptible.

Some would attribute this state to syncope, but the cardiac failure is here distinctly secondary.

The condition described during struggle very closely resembles the second stage of carbonic acid poisoning (see *Landois and Stirling*, vol. i, p. 283). Is it possible that carbonic acid poisoning may be the cause of this state? It is not necessary that it be administered to the patient in order to induce carbonic acid poisoning. All that is needed is to diminish the elimination of the carbonic acid from the body of the animal by depriving it of a sufficient supply of oxygen. This is seen in a marked degree when nitrous oxide is administered. Nitrous oxide has no intrinsic anæsthetic property, but it produces anæsthesia indirectly by depriving the blood of oxygen, and so preventing the elimination of the carbonic acid, which then acts on the nerve centres, producing anæsthesia. This may also obtain when chloroform vapour is administered in too concentrated a form, preventing a sufficient supply of oxygen, and hindering the elimination of carbonic acid.* It is also possible to induce it by mechanical obstruction to respiration, such as by paralytic closure of the glottis. So it is possible some sudden syncopes seen under chloroform may be due to reflex action, induced by the action of carbonic acid gas upon the periphery of the vagus in the lung. Therefore, such syncope is secondary to the asphyxia, and a direct result of it.

* Wood has shown that "carbonic acid, when breathed into the lungs alone, sometimes causes a slight and temporary rise in the arterial pressure, but usually at once, and always after a very short time produces a very decided fall of arterial pressure. On the other hand, when carbonic acid is taken *properly diluted*, it distinctly increases the arterial pressure, apparently having most power when mixed with oxygen in the proportion of two to one." Dr. Wood's experiments also point to the fact that carbonic acid has a double action, that "by stimulation of the vaso-motor centre it acts to increase the pressure, while by inhibiting the heart, it acts to lessen the pressure. It is also clear that the carbonic acid acts on the branches of the vagus in the lungs, as when the vagi were cut the inhalation of carbonic acid no longer produced the distinct slowing of the pulse." (*A Research to Determine the Action of Nitrous Oxide, Nitrogen, Oxygen, and Carbonic Acid upon the Circulation, with Special Reference to Nitrous Oxide Anæsthesia*. By H. C. Wood, Philadelphia, P.H. George S. Davis, publisher, Detroit, Mich., 1890.)

It is well to remember that Professor Rutherford arrived at the conclusion that the cardiac arrest was not due to direct reflex action, but to stimulation of the cardio-inhibitory fibres of the vagus, by the state of the blood resulting from arrest of respiration.

ANÆSTHETIC EFFECT OF CARBONIC ACID GAS IN LARYNGEAL OBSTRUCTION CAUSED BY DIPHTHERITIC DEPOSITS.

It is interesting in this respect to recall the anæsthetic effect of carbonic acid on the human being labouring under diphtheritic laryngeal occlusion from false membrane. In the latter stages of this affection, there is, along with the lividity of the face and skin, a blunting of all the senses. A time arrives when the forced respiration is maintained by the power of the will which is only exerted fitfully. In the intervals the patient doses; the moment this occurs the respiration slows down gradually, and at last ceases, when the patient awakes with a great gasp, followed by a series of violent and forced inspiratory efforts. The pulse in such cases is barely perceptible, the arterial pressure is very low. An anæsthetic is not required in such a case for the performance of tracheotomy. The patient may wince a little when the skin is severed, but remains absolutely passive during the remainder of the operation. A slight whiff of chloroform (sufficient to destroy the intelligence) in such a state causes instant collapse, cessation of respirations, imperceptible pulse, and intensification of the lividity. The carbonic acid is apparently increased by the chloroform vapour getting into the lungs, while the channel for normal respiration is so much restricted that the usual amount of oxygen is excluded. In such a state instant opening of the trachea, and the employment of artificial respiration, with remittent pressure upon the heart—(the ribs yield in children)—quickly brings him round.

ASPHYXIA MISTAKEN FOR PRIMARY SYNCOPE, AND HOW THE MISTAKE MAY OCCUR.

Some cases of death under chloroform attributed to primary syncope are in reality due to asphyxia, the occurrence of which has been overlooked by the administrator on account of his having taken the heavings of the chest and abdomen as a guide to the respiration, believing the patient to be breathing as long as these continue. This is an entirely fallacious sign and if depended on must occasionally lead to plunging the patient into a dangerous or fatal condition. If toward the end of this state the condition of the patient becomes alarming and someone there examines the pulse, they find it imperceptible at the wrist, and they conclude that death has occurred by primary syncope. Conclusion No. 28 of the Hyderabad Commission report states that many cases of reported dangerous

failure of the heart under chloroform are really due to asphyxia, which the administrator has allowed to occur from *want of attention*. I agree with them in believing that many cases of apparent failure of the heart under chloroform are due to asphyxia, but I show that this may not be due to want of attention on the part of the administrator, but to a radical error inculcated by many authorities in the mode of watching the breathing, and which the Hyderabad Commission seek to perpetuate by "Practical Conclusion X," in which they say—"If possible, the patient's chest and abdomen should be exposed during chloroform inhalation, so that the respiratory movements can be *seen* by the administrator." On many occasions in the past, while a patient was under chloroform, I have observed the cessation of breathing and called the anæsthetist's attention to it, when he has assured me the breathing was right, pointing in support of his observations to the still heaving chest and abdomen, while not a particle of air was entering the lungs. Many fatalities in the lower animals occurring under the influence of the anæsthetic is due to this defective mode of *watching* the heavings of the chest and abdomen. If one observe an animal in this state, the abortive respiratory efforts which it makes cause rhythmical expansion and contraction of the lungs, which continue for a variable period, but occasionally last for thirty seconds or longer after the cessation of respiration. The same phenomena occur in man. The extreme seriousness of this mistake becomes manifest, when it is remembered that it is just during the first half minute after the cessation of respiration that one is able easily to restore the patient by the present use of artificial respiration. Artificial respiration ought to be resorted to even after the lapse of several minutes from the cessation of respiration, but the restoration becomes more and more difficult the longer it is delayed. (The proper mode of observing the respiration is given further on.)

PRIMARY SYNCOPE FROM SHOCK OR POWERFUL PERIPHERAL IRRITATION.

This may be caused in a variety of ways. First, by shock produced by peripheral irritation inhibiting the intrinsic cardiac ganglia. Such shock occurs quite independently of the chloroform, and may be seen in any recipient of severe injury. It was not unusual in patients who were subjected to painful operations before the days of anæsthetics. Whether a small quantity of chloroform increases the danger of syncope, by

diminishing the power of the higher centres, and thus allowing the reflexes to become more dominant, is questionable, though it is quite conceivable and has an analogical foundation. In people who have a "highly nervous temperament" very slight peripheral irritation may be sufficient to induce syncope.*

When primary syncope does occur, one of its chief causes is admittedly reflex inhibition of the cardiac ganglia. This form of primary syncope is clearly preventible. Not only is it not caused by the chloroform, but, were a sufficient amount of chloroform administered, it would safeguard the heart from such peripheral impressions. In order to secure this end, the chloroform ought to be administered until the reflex function of the central spinal axis is abolished, and the muscles lie perfectly relaxed. Before this stage has been reached, no act calculated to produce pain ought to be done to the patient, and, of course, no surgical operation ought to be permitted. It is important to note that in some, at least, of these cases the conjunctival reflexes are said to have been abolished before the operation was commenced. I believe, when primary syncope does occur, it must often do so in this way. This form of primary syncope is preventible, inasmuch as the patient ought to be placed fully under the influence of the anæsthetic before any act which could produce pain, or an operation, is commenced. It ought always to be remembered that chloroform protects from this very kind of mishap, but it only does so when it has produced abolition of the reflexes.

ABOLITION OF CONJUNCTIVAL REFLEXES NOT ALWAYS A TRUE TEST OF THE GENERAL REFLEX ACTION BEING PLACED IN ABEYANCE, HENCE THERE IS DANGER IN TRUSTING IT ALONE.

Many surgeons and physiological experimenters take the conjunctival reflex as an absolute guide to the abolition of all the other reflexes. Though this obtains as a broad general rule, there are many exceptions. Often the conjunctival reflex is abolished when the other reflexes are yet active. This is apt to occur when chloroform vapour is permitted to come into direct contact with the conjunctiva, such as when the

* A case of primary syncope occurring in one of London Hospitals was due to reflex inhibition. The patient, who had cardiac disease, was operated on before chloroform narcosis was induced—only having had a few whiffs. Amputation of penis was performed with one sweep of the knife, when patient suddenly died from syncope. Dr. Cameron has detailed to us another case of primary syncope occurring in his own practice.

eyes are kept open while chloroform is administered on a towel. The abolition of the reflex is then due to the local effect of the anæsthetic vapour on the conjunctiva. This has been observed by me in over fifty cases. It is clear that, were the surgeon judging the depths of the anæsthesia by the conjunctival reflex alone, and then commencing a severe and painful operation, primary syncope might ensue from reflex action. There has also been observed, in a number of cases, persistence of conjunctival reflex, while the other reflexes were in abeyance. Therefore, conjunctival reflex when abolished does not always indicate a corresponding abolition of reflex action generally.

THE EFFECT OF POWERFUL MENTAL IMPRESSIONS AND EMOTIONAL STORMS, OCCASIONED WHILE UNDER THE ANÆSTHETIC, IN THE PRODUCTION OF PRIMARY SYNCOPE.

Primary syncope may also be induced during first stage of chloroform administration by powerful mental impressions, or violent emotional storms, arising while patient is going under influence of the anæsthetic. Everyone knows of instances of powerful mental impressions producing syncope in ordinary life. On one occasion a man of 28 years of age, who was supposed to have had no cardiac affection, was crossing a street when his road was blocked by a vehicle which he had not observed. He started back, turned deadly pale, and fell in a heap, dead. He had had no physical injury; the vehicle was not near enough to do so. Again, a few words written on a paper have been known to fell a man as effectually as a blow from a sledge-hammer. Under chloroform it is quite clear that mental processes are carried on, as may be learned from the conversation of the half anæsthetised patient, ranging from amatory declarations to violent altercations, accompanied by tremendous struggles. A state of mental terror would produce a marked depressing effect upon the heart, already enfeebled by the action of the anæsthetic. In a patient who was on three occasions placed under the influence of chloroform, there occurred, during the first stage of narcosis, on each occasion, indications of deep mental depression, with wringing of the hands and a burst of grief, during which the pulse lowered in volume till it became imperceptible at the wrist, and this was accompanied by excessive blanching of the face and feeble respiration. They were, on each occasion, relieved by lowering the head for a few minutes, after which she passed easily under the anæsthetic, without further disturbance. This patient had no recollection of her grief when she

recovered from the influence of the anæsthetic. She, however, said that anything which caused her mental annoyance sent a "stoon" to her heart. Another patient did remember the state of mental anguish she passed through in the first stage of chloroform narcosis, which had a somewhat similar effect to the above. The bearing of the recollection of these vivid dreams upon the groundless accusations sometimes formulated against medical men who have placed patients under an anæsthetic is obvious. This condition depends on the state of the patient's mind more than on the anæsthetic. One cannot blame sleep for producing nightmare.

THE EFFECT OF FRIGHT OR TERROR PRODUCED PRIOR TO ANÆSTHESIA ON THE PRODUCTION OF PRIMARY SYNCOPE.

The state of fright into which some patients are plunged by the mere anticipation of an operation tends to produce syncope during the earlier stages of chloroform narcosis. Fear may be induced by ostentatious examination of the heart just before the patient is to be anæsthetised, or by making injudicious observations in the hearing of the patient calculated to excite alarm.

The following case has been related to me. A weak woman was placed on the operating table, and was about to be anæsthetised. The anæsthetist took up a chloroform bottle and was about to pour some of its contents upon the towel which covered her face, when the surgeon abruptly intercepted him, declaring he was never to give chloroform to a patient of his, as it was a most dangerous drug and occasioned many deaths. The surgeon then directed the anæsthetist to use ether. It is positively stated that the patient did not inhale any chloroform, and yet, when the folded towel was removed from the patient's face to substitute it for the ether apparatus, she was seen to be deadly pale, the heart had ceased to act, and, notwithstanding all their efforts, its function was not restored. This woman died from fright, and in the opinion of some of those who were present, the fright was occasioned by the injudicious remarks made at a critical moment in her hearing. Supposing a small quantity of chloroform had been administered in this case, the death might then have been attributed to primary chloroform syncope, instead of to its rightful cause—fright.

On many occasions I have seen patients who were in dread while being placed under the influence of the anæsthetic, become very much depressed during the first stage of both

chloroform and ether narcosis, though much more often while under the former. Syncope occurred in some, and in others the depression went very near to it.

Under such circumstances, when the operation can be postponed, it is better to do so rather than subject the patient to the risk of syncope. But the administration of brandy before the anæsthetic is given is a powerful guard against this effect. In an adult an ounce, or even two if the fright be great, given five minutes before the commencement of the anæsthetic, steadies the pulse, dispels the fright, shortens the first stage of chloroform narcosis, and enables patient to slip quietly under the influence of the anæsthetic. It has been alleged that alcohol causes vomiting. This is difficult to prove, owing to the frequency with which vomiting occurs under chloroform; but even if it be granted, the good derived greatly outweighs the trouble occasioned by the vomiting. I have never seen reason to regret the giving of this form of Dutch courage; on the other hand, a mixture of one part of chloroform to two of ether serves excellently well in such cases, the stimulating effect of the ether being of great service.

PRIMARY SYNCOPE OCCURRING DIRECTLY FROM THE EFFECT OF THE ANÆSTHETIC UPON THE DISEASED BRAIN.

Many surgeons deny that primary syncope can occur in any other way than by reflex action, and the Hyderabad Commission are particularly strong in supporting this conclusion. Some surgeons also declare that no death can occur under chloroform narcosis except from negligence. As I cannot agree with these statements, you will allow me to relate the only case of death under an anæsthetic which I have seen in my own practice. The patient was a shoemaker about 59 years of age, the subject of pronounced carcinoma of the tongue and floor of the mouth. He was a well developed man, of rather stout build, though he had been losing flesh during a few months prior to admission. He was active and intelligent, of a cheerful disposition, and fond of a joke. He had been in the habit of drinking whisky to excess, but had stopped it for some years, because it did not "do with him." The chloroform was administered by a competent and highly intelligent house surgeon who now occupies one of the foremost positions as a lecturer. The pulse was observed by another man, quite independently of the anæsthetist. All preparations for the operation were ready, and I was standing by the patient's side,

waiting till he was fully under. There was no talking going on. The anæsthetist was listening to the breathing, which was free and regular. I was looking at the patient, believing he was going easily under, when he was suddenly seized with a tremor-like shudder which ran from head to foot all over his body, at the termination of which the pulse-observer called out, "The pulse has suddenly stopped." I placed my ear instantly over his chest and could hear no cardiac impulse. There was a decided pallor over his face. He was breathing naturally and regularly at that time, as was verified by the anæsthetist, the pulse-observer, and myself. He continued to take four or five full, easy inspirations, after which the inspiration ceased. All the usual restoratives were tried, along with artificial breathing and attempted cardiac stimulation, but they were of no avail. The patient was dead. The *post-mortem* showed that though his other organs were in a fair condition for a man of his age and habits, his brain was the seat of chronic œdema, accompanied by considerable serous distension of the lateral ventricles. This condition could not have supervened during the administration of the anæsthetic, though the latter may have augmented the serous effusion to a slight, though a sufficient extent to produce a fatal result. Subsequently his master and his companions were interviewed in the hope that some light might be thrown on the history of his disease. They declared that he had been in the same employment for over thirty years, and they regarded him as being in good health until his tongue began to be affected. He however, had been a heavy whisky consumer for a great many years, and could take six or seven glasses of whisky of an evening without "being the worse of it." Within the last two years he had to reduce the quantity very considerably, because even a small amount made him insensible, and, once he became so, he remained in this state for several days. At the New Year holiday, eight months before his admission, he had been induced to take two glasses of whisky, after which he became insensible, and remained so for three days. From this statement it was probable that the œdema of the brain had been present for the last two years of his life, and was gradually increasing during that period. A very little engorgement of the cerebral vessels, such as was occasioned by the small quantity of alcohol—two glasses—was sufficient to throw him into a comatose state. It is probable that the œdema had increased during the eight months which had elapsed before admission, and had he tried the experiment after his admission to the infirmary, a much smaller quantity of whisky

would have produced a like or even a more serious result. The small extra engorgement caused by the primary stage of chloroform anæsthesia was sufficient to increase the œdema, and to paralyze the already enfeebled cardiac centres. Thirteen years ago, when this occurred, I had not so many opportunities of becoming acquainted with cerebral diagnosis, but in making a retrospect through the experience since acquired, I hesitate to believe a positive diagnosis of this cerebral œdema could have been arrived at, with the data at our disposal before the operation. Granted the administration of an anæsthetic in such a case, the result was inevitable. Ether would have acted more surely in bringing about the same result, and would have killed in a shorter time, as it induces greater cerebral congestion.

Although presenting this fatality under chloroform as clearly due to the action upon the brain producing primary syncope, it is necessary to add, such an occurrence is rare, the majority of cases of death occurring under chloroform being no doubt due to asphyxia.

I have since found, in cases of cerebral disease accompanied by œdema, or in those in which œdema is readily produced, any anæsthetic is apt to increase the œdema. Ether does so rapidly, and is dangerous in these states; chloroform does so, but much more slowly than ether. Prolonged administration of chloroform has in such cases a marked effect. It is also interesting to see how chloroform sometimes reveals brain defects which cannot be seen when patient is not under the influence of the anæsthetic. Squints, for instance, arising from functional defects in special groups of muscles have been frequently seen while under chloroform, and these disappeared as the patient recovered from the anæsthetic. This is a subject requiring special attention elsewhere, but information has occasionally been obtained under these circumstances which helped the diagnosis of the disease.

Chloroform, as well as ether, in concentrated form, may act directly upon the brain centres, and, if pushed far enough, will interfere with the functions of the cardiac and respiratory centres. They will do so all the more easily in diseased brain conditions.

LATE SYNCOPE DUE TO RETURN OF REFLEX ACTION WHEN ANÆSTHESIA IS PASSING OFF.

When anæsthesia is passing off, one of the first indications of the returning reflex action is that of vomiting, with its

accompanying sickness. In severe sickness, even without chloroform, there is a marked depression of the pulse, pallor of the skin, dilatation of the pupils, blanching of the face, coldness of the extremities, and tendency to syncope. Under chloroform the same phenomena appear, but the tendency to syncope is the most alarming feature, and the cause of it is often overlooked, while the syncope is erroneously attributed to the direct action of the chloroform upon the heart. The depression due to the sickness may last for some minutes, occasionally for a much longer period, before being relieved by the vomiting. After the vomiting the depression disappears, and the patient's circulation is restored. Vomiting during an operation is, as a rule, an indication of a return of reflex action, and shows that the administration of the anæsthetic has not been sufficiently evenly pursued. When the administrator is sufficiently active, vomiting does not occur during the operation, though it may do so when the anæsthetic is removed. A good anæsthetist seldom permits vomiting during an operation. When vomiting is about to show itself, a little more of the anæsthetic prevents its occurrence.

WARNING AS TO VOMITING BEING ONLY A REFLEX ACT AS FAR AS STOMACH AND ŒSOPHAGUS ARE CONCERNED.

It must not be forgotten that vomiting is only a reflex act as far as the stomach and œsophagus are concerned, and that the contents of the stomach remain in the mouth and pharynx, unless voluntarily expelled, or are favoured in their expulsion by the action of gravity. Under an anæsthetic, when vomiting does occur, it is the anæsthetist's duty to see that the vomited matter be removed from the pharynx. Deaths, both under ether and chloroform, have occurred from a neglect of this precaution. Letting the head hang over the table assists in preventing asphyxia by allowing the contents of the stomach to pass away from the larynx, and swabbing the pharynx out with a sponge on a handle is the surest way to get rid of foreign matter lodged in the pharynx. It is well to have a sponge on a handle ready for such cases.

HEART DISEASE IN RELATION TO ANÆSTHETICS, AND THE RELATIVE VALUE OF ETHER AND CHLOROFORM.

Ought a person, suffering from any of the forms of heart disease, be subjected to anæsthesia for surgical purposes?

No doubt every surgeon would prefer to deal with a patient who had a healthy heart, and in the presence of advanced heart disease he would be inclined to avoid performing operation of mere convenience. Granting, however, that an operation be required, would it be better to do this operation without an anæsthetic in the presence of heart disease? To operate without an anæsthetic would be to expose the patient to the danger of sudden death, arising from shock acting upon a weak heart. To place them under the influence of an anæsthetic would be to guard the heart against this peripheral shock. To do this efficiently, it is, however, necessary to place the patient so thoroughly under the influence of the anæsthetic, as to place the reflex actions completely in abeyance, and to judge of this latter, not by conjunctival reflex alone, but by the contraction of the pupils as well as the general condition of the patient. In this stage no peripheral shock can reach the heart, and the operation can be performed with safety. To commence the operation before thorough anæsthesia has been induced, is to expose the patient to imminent danger.

Granted that an anæsthetic has to be administered, whether will ether or chloroform be the better? Many unhesitatingly declare for ether, under these circumstances—because it stimulates the heart's action, while chloroform depresses it. No one doubts that ether is a powerful cardiac stimulant, while chloroform diminishes the blood pressure and depresses the heart. Before coming to a conclusion as to the relative value of each, we require to ask—Is it necessary that the heart be stimulated while patient is under an anæsthetic, and, if so, is the stimulation derived from ether inhalation sufficient to maintain a normal cardiac action, or does it exceed this? is it, in fact, a stimulation which can be controlled or regulated? Again, is the depressent effect of the chloroform more than sufficient to exercise a calmative effect upon the heart?

I am bound to answer, from my own experience, that the heart does not require stimulation in the great majority of cases, and, even where the cardiac action is feeble from disease, if one avoids nervous excitement, the chloroform acts well, and when the patient is fully under its influence the blood pressure, as far as it can be measured by the pulse, is good, and, in many instances, even better than during the patient's wakeful moments. When the patient can be examined before the operation, the whole of his internal organs are looked to, so that an idea of the weak points are ascertained. This is not done at the moment the anæsthetic is about to be administered, which would be a mistake, but

days previously if possible. In many cases of known cardiac weakness, aortic regurgitation, flabby and suspiciously fatty heart, valvular disease, &c., chloroform has been administered without any hitch. During the last 18 months there were, in my practice, 29 cases of cardiac affections anæsthetised with chloroform without any difficulty. In several of these the pulse was weak and soft prior to the operation; after full anæsthesia was induced the pulse became markedly improved, so much so, that those detailed to watch the pulse remarked the improvement and commented on it. So that, in many cardiac cases, the chloroform, instead of exercising a prejudicial effect upon the pulse, improves it. The *rationale* of its action in these cases may not be clear, but the fact remains. There are cases, however, where some form of stimulation would be an advantage. Ether, under these circumstances, might be employed, if its stimulating power was controllable. Ether stimulates the heart in many instances to excess; it also is apt to cause forced breathing, both of which, continued for a long period, are exhausting to the patient. Ether also tends to produce pulmonary and other internal congestions, which, of course, increase the amount of work thrown upon the heart. One would not advise for a fatty heart, or one where there was even aortic regurgitation, an increased amount of work, such as running rapidly up a hill, and yet that is much the same as what is done when the patient is put under ether. Even the advocates of ether admit that those who have a tendency to venous congestion are bad subjects for ether anæsthesia, and serious consequences are apt to arise from its use. Those who fear chloroform, fear it because in their minds they believe it is apt to induce syncope, yet this is admittedly the very way in which ether kills. Dr. Hartley pointedly made reference to this, and Mr. Vincent Jackson's case at Wolverhampton, mentioned the other day in the *Lancet*, was another instance of death under ether occurring from syncope. Further, were we regarding the danger from peripheral shock as an important point, chloroform would then be the safer, as it abolishes reflex action much more absolutely than ether, unless the patient is plunged profoundly under its influence, when ether may become dangerous. On the whole, in the majority of cases of cardiac disease chloroform is the safer anæsthetic; it calms the heart, it protects from the effects of peripheral shock, and the patient may be stimulated, if need be, by alcohol, before or during the operation. Ether not only may cause exhaustion during the operation—if it be prolonged—but the tendencies to venous

congestion in the lung exercise a further exhausting influence on the heart for many hours, and it may be for days, after the administration.

IS ETHER SAFER THAN CHLOROFORM ?—STATISTICAL EVIDENCE.

It has been said, however, by some of the speakers that ether is for all purposes safer than chloroform, and the only proof of this assertion seems to be a statistical one—quoted from certain text-books, that with ether the fatalities are 1 in 5,000, and with chloroform 1 in 2,000 or thereby. I cannot understand on what data this conclusion is arrived at. It must be a matter of great difficulty to ascertain the number of administrations in a single city like this, and a statistical conclusion, to have any value, must be based, not on a limited number of ascertained cases, but on a very wide induction, extending over a great area, and over a considerable period of time. The figures given by the various speakers at this discussion will not bear out this assertion. Thus, Sir George Macleod computed his cases as 15,000, with one death *under* chloroform (though Sir George denied that it was from chloroform); Dr. Buchanan, with some 9,000 cases (the number he said was under the mark), had one death, and many others occupied a somewhat similar position. From these two alone there is combined 24,000 cases, with two deaths while *under* the anæsthetic, one of which was not due to the anæsthetic. I have recently met in the Midlands, two surgeons of high standing, one who has been practising for nearly 30 years, another for over 20, neither of whom have had a death from chloroform, though it was constantly used in their practice to the exclusion of ether. The statement which Dr. Laurie of the Hyderabad Commission makes is a striking one: that he and the late Professor Syme conjointly have administered chloroform on 45,000 occasions without a death. Even suppose these figures are doubted, as they do look large—regard his statement from another aspect. The late Professor Syme and Dr. Laurie have given chloroform from its introduction in 1847, the former till his death, the latter to the present date, without a death occurring in the hands of either of them. That is a sufficiently striking experience. Taking the statement in any way one likes, making all allowances and deductions as to the figures, it remains a very remarkable fact that chloroform has been given for over 40 years almost daily, by first one, then another person, and in two very

different climates, cold and hot, without one death. And this statement finds analogy in the experience of two English surgeons who have been equally fortunate. It is also a point of importance that the Hyderabad Commission have so strongly concluded in favour of chloroform. It must be remembered that the conclusions arrived at by that Commission cannot be considered as due to the man who dominated the first Hyderabad Commission, as the *Lancet* doubted its conclusions, and sent out as a representative of their own views a man of the highest scientific status, Dr. Lauder Brunton, who, after the most searching experimental investigation which has ever been made on the subject, returned a convert to the opinions promulgated by the first Commission, which were in accordance with those held and taught by Syme and Simpson.

Regarding personal statistics, it is difficult to form an accurate estimate, as chloroform is so often administered without note being taken, such as for preliminary examinations, for diagnostic purposes, painful dressings, secondary suture, &c. If Sundays, and 30 days of holiday be deducted, a year is left of 283 days, and approximately an anæsthetic is administered thrice on the remaining days (occasionally it is five or six times in one day). It is therefore calculated that in my wards of the Royal Infirmary, the Children's Hospital, and in private practice, anæsthetics have been administered and personally supervised by me between eleven and twelve thousand times (11,886) during the last 14 years. But suppose 1,000 be deducted, so as to place it within instead of over the mark, that would leave over ten thousand cases. About five hundred of these have been ether, ether alone, or ether with nitrous oxide; in several hundred instances ether has been added to the administration of the chloroform in prolonged operations, for possibly ten minutes or so, once or twice during the continuance of the operations. On many occasions ether and chloroform mixed have been given. The remainder have been chloroform administrations, occasionally assisted by alcohol, given before the commencement of the chloroform narcosis, and sometimes during the anæsthesia by rectal injections. Out of these, the only case of death is the one already related arising from syncope, due to increase of œdema in a chronically œdematous brain. As far as can be ascertained, respiratory difficulties occurred in 40 cases, and in 30 of them artificial respiration was resorted to for a variable period. Lowering of the force of the pulse has been frequently seen, especially when associated with sickness, which was relieved as soon as

vomiting occurred. Depression at the termination of prolonged operations (lasting several hours) has been noted, and the administration of ether in such has produced nothing further than a short lived flip. When ether is given, however, at intervals, during a prolonged administration of chloroform, it acts well as a stimulant. In many instances the administration of ether and chloroform either in equal parts by weight, or in proportion of 2 of ether to 1 of chloroform by measure, makes a very agreeable anæsthetic, stimulates the heart and circulation generally, while the chloroform prevents the irritating effects of the ether. To have such in a perfect condition, the mixture ought to be effected at the time the inhalation is about to take place, and not over night. It is best administered in a Clover's inhaler.

Some who have spoken on the side of ether have so strongly advocated its use, as to lead one to suppose that death could not happen under it. This is unfortunately far from being the case. Of those who have advised its use in this discussion, one only has had a sufficiently extended experience to make his observations of weight statistically, and he, Mr. Hartley, has seen two deaths from ether. In the *British Medical Journal* for 1885, there is a paper by Dr. Ernest H. Jacobs of Leeds, on "Deaths from Anæsthetics in 1884," occurring in Great Britain, and which were recorded in the Journals or as had come to his knowledge. From it, we see that there were nine deaths from chloroform; two from mixtures of chloroform and ether; three from methylene—two of these from syncope, the cause of death of the third is not stated; six were from ether. That is a very instructive table. When it is remembered how frequently in Britain chloroform is administered, in comparison with ether (possibly 10 to 1), this list of fatal cases from chloroform is much below the average of deaths from ether: chloroform 9, ether 6. Even suppose chloroform were only administered twice as often, its mortality would require to have mounted to twelve, in order to have been as great as that of ether. The mortality from methylene is enormously higher than from either chloroform or ether in that year, when one considers how seldom it is given. A few months ago, Mr. Vincent Jackson of Wolverhampton, reported a case of death under ether, due to syncope, after a very brief administration of ether. In this case, the patient had had chloroform about two weeks previously, and took the anæsthetic well, and again, a week before death he had nitrous oxide without ill effect, yet he succumbed to ether, and his death was due to syncope. Here was a patient who was

anæsthetised with chloroform without ill effect, and who shortly after died from ether. It is strange that some of the Journals who are so much in favour of ether have not commented upon that fact. In Germany, and over the Continent generally, surgeons administer chloroform, almost to the complete exclusion of ether. In Schede's klinik in Hamburg, two English speaking surgeons who were preaching a crusade against chloroform, asked him to permit them to show him the administration of ether, as they alleged it was so much safer than chloroform. Dr. Schede allowed them to do so, though he expressed himself as satisfied with chloroform. They administered ether, but the patient died on the table from its effect before any operation was performed. In my own experience, I have had no deaths from ether, but on several occasions patients have become so alarmingly ill from its effects that its use had to be discontinued, and in at least two of these, chloroform has been substituted, and complete anæsthesia established by it without any difficulty. In one of these the anæsthetist was an experienced ether administrator. It was the case of a gentleman who had come from the south of England to have an operation performed on him, but he stipulated that ether should be given him by his own medical attendant, who had a strong ether bias. The patient was also imbued with distrust of chloroform. He stated, that though he liked Scotch surgery, he detested chloroform and would not have it as long as ether would serve the same purpose. When examined by me, I believed he had a fatty heart and a tendency to venous congestion. He was told that he would be much safer with chloroform than with ether. He insisted upon having ether. It was given him, and before operation was commenced his pulse became very weak and then ceased at the wrist. The ear placed over the chest found his heart in a quiver, without any distinct rhythmical contractions. It closely resembled the condition known as delirium cordis. It was fully ten minutes before patient was out of danger, during which many restoratives were applied. After he had fairly recovered, he took chloroform without any difficulty, during which the operation was performed. It has also occurred several times, when ether has been continued for several hours, that the pulse has gone down to a very low ebb, and was only somewhat revived after the cessation of the anæsthetic and the administration of restoratives. It seemed in these cases to exhaust the energy, and when this does occur, there is more difficulty in restoring the exhaustion than in a similar state from chloroform.

DANGEROUS AFTER-RESULTS FROM ETHER.

Again, patients who have been kept under the influence of ether during prolonged operations, occasionally exhibit, hours or days thereafter, bronchial affections which may lead to death. Yet those deaths are often not recorded as due to the ether. I have not had any deaths from such, though I have seen cases with pneumonia or bronchitis occurring after prolonged ether inhalation. It is said these only occur where the ether has been badly given, or with improper instruments. But it has been administered in my wards by etherists of great experience, who were visiting the wards, and each of them have warned me to place the patient in a warm room with a fire for a few days after the operation, lest bronchitis should arise, and they acknowledged that sometimes death did arise from such affections days after the administration of the anæsthetic. In Mr. Jacobs' list of cases already referred to, there is a case of patient operated on for ovariectomy who took ether well, but who died seventeen hours after operation from congestion of the lungs, which manifested itself twelve hours after the anæsthesia. The ether was administered by a competent person. Chloroform is not followed by such consequences. Some are coerced into using ether, who openly confess they prefer chloroform and believe chloroform the better anæsthetic, but use ether because in the district in which they live the opinion prevails that ether is safe and chloroform is dangerous. As an American surgeon told me, he did not use chloroform, because, if a death occurred under it, there would be an outcry; whereas, if it occurred under ether every one would be satisfied, the people believing that a death from ether was brought about by the hand of God, and a death from chloroform by the hand of man!

THE ACTION OF THE PUPIL UNDER CHLOROFORM.

As the condition of the pupil under chloroform is erroneously described in many physiological works, while in others no reference is made to it, and as very few surgeons have a clear appreciation of its value in relation to reflex action, and as a guide to dangerous development, I will here give in summary what has been written by me in detail in a paper on the "Pupil in its Semiological Aspects," published in the *International Journal of Medical Science*.

In the first stage of anæsthesia from chloroform, the pupils are mobile, and follow no rule regarding their size. In the

second stage, which is identical with the abolition of reflex action, they become contracted and fixed. The stabile myosis continues as long as patient remains in that state. But if the chloroform be pushed to a dangerous extent, and the function of the cardiac and respiratory centres become involved, then the pupils become widely dilated and fixed. So that this third, or dangerous state, is always indicated by the pupillary condition. The contracted and fixed pupil indicates the safety zone of chloroform narcosis. When this stage has once been reached, and a sudden dilatation ensues, it betokens extreme danger, which, however, may yet be overcome by prompt action on the part of the administrator. It is true that sudden dilatation does ensue in the presence of intense sickness, and though this may alarm the anæsthetist it is an error on the safe side, and is not lost, as the patient requires extra attention at that time. The anæsthetist ought to keep the patient in the contracted pupil stage, as in it the reflexes are abolished.

EDUCATION OF STUDENTS IN ADMINISTRATION OF ANÆSTHETICS.

At present, at all the examining boards in the kingdom, a man may receive his licence to practise medicine and surgery without giving evidence of having been taught the theory of anæsthetics, or of having administered chloroform on even a single occasion! It has been maintained that a student ought never to be allowed to administer anæsthetics. If this be the creed of those who are responsible for the teaching of students, why are they not sufficiently logical to pursue this belief to the end, and refuse to grant those students degrees to practise medicine and surgery? The mere legal "qualification" to practise won't teach that man how to administer an anæsthetic. The granting of licences and degrees to those who have never been allowed to administer anæsthetics is reprehensible.

But, while advocating that every student ought to have the opportunity of administering chloroform or ether, I as strongly hold that they ought not to be called upon indiscriminately and without preparation to do so. This practice of indiscriminate choice of students from the benches of a large class, without the operator knowing anything as to their individual knowledge of the subject, has conduced to mischief, and has alienated teachers from permitting students to administer anæsthetics. The teacher ought first to teach theoretically the physiological action of anæsthetics, pointing out their dangers and how to

obviate them. He ought, secondly, to ascertain, by written and oral examination, the knowledge of the student upon the subject. To those who have shown proficiency in this theoretical examination tentative certificates ought to be given, which would enable the students to present themselves for the practical part of their instruction. They ought then to be permitted to administer the anæsthetic on at least twelve occasions, under the superintendence of a thoroughly competent person, who could be responsible for the safety of the patient. In our hospitals this duty would fall naturally to the surgeon and house surgeons. Thus the safety of the patient is secured, while the student is taught practically. A certificate is then granted to him of having received theoretical instruction in the effect of anæsthetics, and of having administered anæsthetics on at least twelve occasions. This practice obtains in my wards, and I have had no reason to regret it.

WHAT IS A SAFE DOSE OF CHLOROFORM ?

In medico-legal enquiries into deaths from chloroform the question is often asked—How much chloroform was used ? The answer is supposed to be—Not more than 2 drachms ! or if it be more, an overdose is supposed by the authorities to have been given. This question, with its stereotyped answer, is one which must have been formulated at a very primitive stage of chloroform exhibition, and presumes that chloroform is given mechanically or by measure, as one would give a dose of laudanum. The dose of chloroform ought to be judged by its physiological effects, and not by a definite quantity poured out of a bottle. Two drachms, if given in the wrong way, might kill ; whereas several ounces might not even put the patient under. Besides, the quantity poured out of a bottle is no criterion of the amount inhaled by the patient, especially when the towel is used, as a great part of the chloroform is wasted, and is not taken into the patient's system. The quantity of chloroform used will depend upon the susceptibility of the patient, the form of apparatus used in its administration, and the duration of the operation. The dose must be judged alone by its physiological effects.

VARIOUS INHALERS.

Many administrators of chloroform deprecate the use of an apparatus, though they will use the corner of a towel caught with a safety pin, and a drop bottle ! Don't let us be

frightened by the name apparatus, but let us enquire into the best way in which chloroform can be conveyed into the patient's system. The desideratum is to have the anæsthetic thoroughly under the control of the administrator, so that he can regulate with precision the quantity given at each inspiration; and while the anæsthetist can do so, it ought to be quite beyond the power of the patient, voluntarily or otherwise, to inhale more than the anæsthetist gives.

The folded towel has been, and is still, very much used. Many surgeons who never have had a fatal case use it, and are satisfied with it. The dose, however, is irregularly given: first when the chloroform is poured on, it is rather concentrated, and it gradually becomes weaker until the chloroform is again added. It places a reservoir of chloroform at the command of the patient, who inhales a greater or less quantity according to the depth of his inspirations. No doubt, one practised in its use can overcome these difficulties. The danger still exists for novices. The towel is handy, most extravagant on the chloroform, irregular in the distribution of the anæsthetic, and contains an element of danger in unskilled hands, inasmuch as it presents an uncontrolled reservoir of chloroform to the patient.

Allis's inhaler probably produces anæsthesia more rapidly than any other, and it effects a saving in chloroform, but it is a dangerous instrument in the hands of those who do not know its power, and especially to one who is accustomed to administer chloroform on a towel. It also presents an uncontrolled reservoir of chloroform over the patient's mouth and nose.

The flannel or other media stretched on a frame, whether in the form of Esmarch's, or the simple corner of a towel, with a drop bottle, is a much better instrument, as the uncontrolled reservoir over patient's mouth is more limited, and it is possible to work the apparatus in such a way as to render it almost controlled.

To blow the chloroform vapour in regulated quantity over patient's face, leaving the face exposed, would be one of the best methods, were it not that the vapour of chloroform diffuses itself so quickly in the atmosphere that it takes a long time to anæsthetise the patient, though this has several times been done by me in this way. If the vapour so blown be received into a cup-shaped vessel, which is placed over mouth and nose, then the vapour may be inhaled sufficiently concentratedly to permit of anæsthesia being produced. This is found in Jünker's inhaler. It is simply a pump forcing a

definite quantity of atmospheric air into a bottle, which there volatilises a measurable quantity of chloroform. This is then blown over patient's face in a known state of dilution. It possesses the following advantages :—There is no uncontrolled reservoir left near patient's mouth ; each stroke of the bellows suffices only for one inhalation, and the amount of chloroform expelled is exhausted before another inhalation takes place. So that, whether patient breathes irregularly, very shallow, or very deep, he cannot take more than is given him by the anæsthetist at each pressure of the ball, and the anæsthetist has that under his complete control. Second—by placing five drachms of chloroform in the bottle for every complete compression of the bellows one minim of chloroform fluid is evaporated, which becomes diluted, as inhaled, with six thousand times its bulk of atmospheric air. While placing patient under, the bellows is blown more rapidly, and when patient is fully anæsthetised the blowing is lessened to about one half the rate. Again, as the chloroform liquid gets less, there is a smaller quantity of liquid taken up with each blast of the bellows, until, when one drachm remains, there is only one quarter of a minim evaporated with each impulse, and this is diluted to one in every twenty-four thousand times its bulk as inhaled. These exact quantities have not been tested by me. They are given in a table which is issued along with the instrument, but, from my experience of the instrument, I believe they are approximately correct. Third—there is no waste of chloroform, and those accustomed to a folded towel would be astonished at the small quantity of chloroform necessary to induce anæsthesia. Fourth—the stage of struggle is often avoided absolutely, and when present is so to a much slighter extent than is usual with other forms of inhalers. This is very important, seeing that syncope is apt to follow this period of struggle. It is the safest inhaler for the administration of chloroform. As a rule it takes longer to place patient "under" with this inhaler than with Allis's. I do not think that a drawback.

It is, however, to be borne in mind that no inhaler is absolutely safe—that a fatal issue can arise even with the safest inhaler : after all, it is the physiological action of the drug on the individual which must be taken as a guide, though an inhaler such as Jünker's permits definite doses to be given, and, in this way, secures at least precision of dose and definite dilution. A competent chloroform anæsthetist can administer chloroform without any form of apparatus, the towel is quite sufficient for him ; he judges by the physiological action, and trusts to nothing else.

MORPHIA AND OTHER DRUGS AS ADJUNCTS TO ANÆSTHESIA.

The use of morphia, administered hypodermically, has been advised as an aid to anæsthesia, and as a preventive of accidents. It certainly is an aid to anæsthesia, but it may narcotise the patient so deeply as to lead to death. It must not be forgotten that morphia becomes intensified in its action in the presence of chloroform. I have seen one-twelfth of a grain injected subcutaneously in a fairly healthy woman ten minutes before administration of chloroform produce profound narcosis, lasting for several hours after the completion of the operation, the patient exhibiting the opium pupil. A case has been reported to me of a fatal issue, following one-sixth of a grain of morphia hypodermically injected twenty minutes before chloroform was administered. The death took place eight hours subsequently. It is quite likely to diminish primary syncope, and there may be good in the combination provided it were accurately wrought out. Meantime, it is occasionally a source of danger. Opium given immediately after an operation, before patient is fully out from the influence of the chloroform, is likewise somewhat dangerous, especially if a large dose be given. Many other combinations I have tried, as recommended and lauded on their introduction, but they have been all found wanting, with the single exception of alcohol, of which I have already spoken. In cases of fright or of weak heart, an ounce of brandy or whisky, five minutes before patient is anæsthetised, stimulates the heart, avoids shock, and facilitates anæsthesia. Before the administration of ether one would avoid giving alcohol. The best method of administering ether is that of Mr. Teale, of Leeds.

METHOD OF ADMINISTRATION OF CHLOROFORM.

Chloroform, as is well known, tends to cause suspension of the functions of the brain in a definite order. It is said to give rise to a period of excitement, but I am inclined to regard this excitement as due to the attendant circumstances rather than to the effect of the vapour. In the first stage of chloroform narcosis, the brain loses its power of sensation and voluntary motion. But in this stage reflex action is still present, and if the anæsthesia did not go further, not only would these reflex actions be a source of annoyance, but the heart would be exposed to the danger of shock from the operation. In this stage the pupils are somewhat dilated, but

may be either wide or medium, and they are mobile, still reacting to light. In the second stage the reflex functions of the cerebro-spinal axis is abolished, and the voluntary muscles lie perfectly relaxed. The parts concerned in the respiratory movement and the sympathetic cardiac ganglia are exceptions. In this stage the pupils are contracted and fixed. This is the safety zone of chloroform narcosis. The narcosis ought never to go beyond this stage. But if the chloroform be pushed, then the functions of the respiratory and cardiac centres become interfered with, the pupils become widely dilated and death is imminent, and will ensue unless prompt preventive measures are adopted. Any impediment to breathing producing complete occlusion may produce this dangerous stage if not at once remedied.

Sickness often causes a marked cardiac depression, when severe, akin to syncope, during which the pupils become widely dilated. When the stomach is relieved this condition passes off. Sickness ought seldom to occur during chloroform narcosis as it is generally indicative of a return of reflex action, and may be avoided by an even administration of the anæsthetic. Vomiting, on return of reflex action, is often attributed erroneously to the anæsthetic used, whereas, it is generally due to the profound insensibility produced.

Where it is possible to have the patient examined medically, that ought to be done, days before the administration of the chloroform. When the patient's case is being enquired into surgically, the state of the lungs, heart, kidneys, and liver can be ascertained at the same time. The information so obtained will place the surgeon in a better position to guard the weak points, and to act instantaneously if danger arises. It is true that there are diseases of the viscera, which cannot be determined by physical signs, and which may prove a source of danger, but that is no reason why defects ascertainable physically ought not to be determined beforehand. In my practice, this is regularly done, and is a source of comfort. This examination can scarcely apply to accidents, where, manifestly, an operation is imperative without delay. An examination of the heart ought never to be ostentatiously made, just as the patient is about to be anæsthetised, as the nervous excitement to which it may give rise, might be prejudicial to the patient. Patients with grave pulmonary lesions ought to have very great care bestowed on them while being anæsthetised.

PREPARATION OF THE PATIENT.

(a) Chloroform is best administered on an empty stomach. If possible, just a little before, or about the time patient would be expecting a meal. If he is kept too long without food, bile is apt to flow into stomach and induce vomiting during chloroform.

(b) A purge twenty-four hours previous to the anæsthetic, and if patient is to be operated on in morning, it is advisable to let him have a good night's rest without being disturbed by purgation. The patient ought to be kept as cheerful as possible.

(c) If he be weak, nervous, or in any way afraid, or has a weak heart, an ounce of brandy with slight dilution ought to be given ten minutes before the anæsthetic is administered.

(d) The patient ought to be kept warm throughout the operation. It ought to be remembered that patient is more or less exposed during operation. An atmosphere which is comfortable for surgeons and attendants with their ordinary clothing, would be quite too cold for a patient more or less divested of theirs, and who is at the same time depressed by the circumstances.

HOW TO ADMINISTER THE CHLOROFORM.

The anæsthetist ought to endeavour to take patient into his confidence, and explain to him what he wishes him to do during the inhalation of the anæsthetic. This often facilitates anæsthesia. He is to ask patient to shut his eyes, as the chloroform nips them. Then to breathe easily and quietly, and if he does not like the chloroform just to blow it out, which ensures a subsequent deep inspiration.

He ought to request the patient to count aloud and slowly, from one to one hundred, and between the announcement of each number, to take an easy, deep breath. The object of that is, first, to divert the mind of the patient; second, he feels that as long as he is able to count, he is able to communicate with the anæsthetist or the surgeon, a knowledge which somewhat soothes him; third, it shows the surgeon that the breathing is progressing favourably—a very great point. Eighteen years ago, I commenced this practice, and since have found it of great service. When it is possible, some one, independent of the anæsthetist, ought to watch the pulse, during the administration. That person's duty is to tell of any weakness which may be perceptible. It is a guide to the surgeon, as well as to the

anæsthetist. The latter ought to be armed with an instrument for opening the mouth, and a forcep for pulling out the tongue if need be.

The duty of the anæsthetist is to concentrate his attention on the breathing, the colour of the face being a help regarding the state of the circulation; and the state of the pupils, as well as the conjunctival reflexes, being a guide to him as to the depth of the anæsthesia.

HE OUGHT NOT to watch the heavings of the chest and abdomen as a guide to the respirations; if he does so, death may ensue from asphyxia before these heavings cease. If he only becomes alarmed at the cessation of the heavings of the chest and abdomen, he may be quite too late to save his patient. Many patients' lives have been lost owing to this fallacy.

Each breath which the patient draws ought to be recorded on the *tympanum* of the anæsthetist; there can be no fallacy as to the patient's breathing under these circumstances. The alternate hot and cold sensations communicated by the expired and inspired air to the finger of the hand which holds the towel or inhaler, placed near the lips, is an additional help. The anæsthetist's attention ought not to be diverted from his duty from the beginning to the end of the anæsthesia. A good anæsthetist will keep a patient in the second stage of chloroform narcosis throughout the whole operation, neither plunging him too deeply nor allowing the return of reflex action. He will find a Jünker's inhaler of use in thus regulating the stage of anæsthesia. He ought also to recognise the undoubted fact, that the *majority* of deaths under chloroform have been due to asphyxia.

Asphyxia may arise under chloroform from various causes—first, from mechanical obstruction due to paralytic action of the ary-epiglottidean folds, or to accumulation of mucus in pharynx, or from the contents of the stomach getting into the trachea; secondly, to too concentrated an atmosphere of chloroform preventing an elimination of carbonic acid; and, thirdly, from the effects of too concentrated an atmosphere on the respiratory centre paralysing it. The second and third may be obviated by giving the chloroform well diluted with atmospheric air, and by keeping the patient in the safety zone. The mechanical difficulties require prompt action when they do arise. The falling in of the epiglottidean folds, along with the backward displacement of the tongue, producing stertorous breathing, or an absolute stoppage of respiration, can be remedied easily in the majority of cases by throwing the angle of the lower

jaw forward, while the weight of the head acts as a counter extending force. Simple as this is, the majority of men don't know how to do it. It ought to be seen and taught to the students during their practical course. Some try to open the mouth while throwing forward the jaw—the one effort defeats the other. The head ought to hang, and the angle of the lower jaw ought to be thrown forward by the thumbs of the anæsthetist. Often a little movement in this direction is sufficient. If it fails, then open the mouth and pull out the tongue, first upwards, then over the teeth toward the chin. At the same time a sponge mounted on a stick should swab out the pharynx. The larynx being clear, if the breathing is still deficient or absent, artificial respiration ought to be resorted to, and if the pulse be weak, elevate the lower part of body and depress the head. In carrying out artificial respiration, the arms of patient ought to be pressed forcibly on the lower part of the chest so as to empty it, next they ought to be pulled out from the sides fully, then stretched outward from the body over the top of the head and extended. This movement must fill the chest with air which ought to be heard to rush in. Don't be satisfied otherwise. Then leave this air in the chest for five seconds, when the process may be repeated.

Bile vomited may get into the trachea and cause occlusion. This is apt to occur if the vomiting is so quietly performed as to escape anæsthetist's attention. Whenever vomiting occurs, the anæsthetist ought to lower the head, open the mouth, and swab pharynx out with a sponge. Let him remember that vomiting is only reflex as far as the pharynx, and there it must lie until removed or inspired. Let the anæsthetist continue by the patient until he is able to speak, and afterwards leave a nurse with instruction how to act should patient become sick or vomit.

CONCLUSION.

In conclusion, it may be that the future will disclose a safer anæsthetic agent than any which we yet possess. However right and commendable it is for experimenters to endeavour to procure new and better anæsthetics, surgeons ought to hesitate before they try upon their patients every new and untried agent, however much it may be lauded from animal experiment. Let the student study the physiological action of chloroform, learn that it is an agent which places the functions of the cerebro-spinal axis in abeyance, but does so

seriatim, in a definite order, and which may, if pushed far enough, suspend them all. Let him be fully alive to its dangers, and how to counteract them, and let him recognise the safety zone of chloroform narcosis, and he will find it an anæsthetic powerful, it is true, but controllable, and though not infallible, yet a most valuable and useful servant. Meanwhile, chloroform is one of the safest and best anæsthetics, though it requires for its proper administration knowledge, skill, and assiduous attention.

CURRENT TOPICS.

KOCH'S TREATMENT OF TUBERCULOSIS IN GLASGOW.—This method of treatment is now receiving a fair trial in the different hospitals in the city. On the 4th December last, Drs. Wood Smith, Lindsay Steven, and Charles Workman received a phial of the remedy from the Empress Frederick of Germany for use in the Glasgow Royal Infirmary, when immediate steps were taken by the superintendent and staff for testing its properties in the wards. Up till the time of writing, about thirty cases have been regularly under treatment, about one-fourth of the original quantity of the fluid having been so far employed.

On the 6th December, 1890, Dr. Alex. Napier received some of the fluid, which was used in the wards of the Victoria Infirmary.

On the 22nd December, 1890, it was announced that two portions of the fluid had been received at the Western Infirmary—one having been sent by the Empress Frederick to one of the Physicians, the other by Dr. Libbertz to the superintendent. Steps were then taken for distributing the remedy among the members of the medical and surgical staff, so that its efficacy as a diagnostic and therapeutic agent might be put to the test.

DEMONSTRATION ON ABDOMINAL SURGERY.—Dr. William Macewen gave a Demonstration in the Theatre of Ward 22 of the Glasgow Royal Infirmary, on Wednesday, 17th December, 1890, at 8 P.M. There was a very large gathering of members of the profession in Glasgow and the adjoining districts, and, in all, eight abdominal cases, which had been recently operated on, were shown. The following were perhaps the most interesting. We give the notes as they

appeared on the circular giving intimation of the Demonstration:—

"(1) *Laparotomy and Enterectomy for Intestinal Obstruction*.—Patient greatly emaciated from chronic intestinal obstruction, occlusion almost absolute, bowel perforated, contents escaping between bowel and parietal layer of peritoneum lining right iliac fossa, and re-entering bowel lower down beyond constriction; about two feet of gut removed—recovery.

"(2) *Laparotomy for Gun-shot Wound of Abdomen*.—Several portions of small intestine perforated by bullet, escape of contents, mode of natural repair; intestinal obstruction caused by doubling of loop of small intestine upon itself at an acute angle at point of perforation of bullet; removal of bullet; relief of obstruction; suture of intestine—recovery. Use of hydrogen gas advised by Senn will be demonstrated."

Two cases of hysterectomy for carcinoma uteri were also shown, the one being vaginal, the other having been performed by removing a portion of the sacrum.

GLASGOW PATHOLOGICAL AND CLINICAL SOCIETY.—The fourth ordinary meeting of the Society will be held in the Faculty Hall, 242 St. Vincent Street, on Monday, 12th inst., at eight o'clock. The following cases, specimens, &c., will be shown:—By Dr. Rutherford—Collis's fracture of the wrist, with fracture of the scaphoid; by Dr. Gibb, Paisley—the tongue, with portion of the lower jaw removed for epithelioma; by Dr. David Newman—the use of the cystoscope in diagnosis; by Dr. C. O. Hawthorne—a patient with a form of pigmentation of the skin, suggestive of Addison's disease; by Dr. Parry—microscopic sections of duct carcinoma of the mamma.

In accordance with the new rule, raising the membership of the Society from forty to fifty, there will exist ten vacancies at the February meeting of the Society.

MEDICAL APPOINTMENTS.—*Glasgow Royal Infirmary*.—Charles Workman, M.D., has been appointed assistant physician; and Quintin M'Lennan, M.B., and D. Mackellar Dewar, M.B., assistant surgeons.

Western Infirmary.—John H. Carslaw, M.B., and Henry Rutherford, M.B., have been appointed physician and surgeon to the dispensary respectively.

THE *British Journal of Laryngology and Rhinology* will be edited this year by Dr. Norris Wolfenden, of London, and Dr. John MacIntyre, of Glasgow. Sir Morrell Mackenzie has retired from the joint editorship.

ST. MUNGO'S COLLEGE—STUDENTS' ANNUAL CONCERT.—On the 10th December last, the members of the Medical Society held their annual concert in the Waterloo Rooms, in aid of the Students' Library. Dr. John Lindsay Steven, Honorary President, took the chair, and there was a large and appreciative audience. More than £30 were collected as the result of the concert.

QUEEN VICTORIA JUBILEE INSTITUTE FOR NURSES.—The second annual public meeting of the Scottish branch of Queen Victoria's Jubilee Institute for providing trained nurses for the sick poor in their own homes was held last month in the Saloon of the Royal Hotel, Edinburgh. There was a considerable attendance. Lord Provost Boyd occupied the chair, and among others on or near the platform were Lord Reay, the Right Hon. J. B. Balfour, M.P.; Professor Sir Douglas MacLagan, Sir Thomas Clark, ex-Provost Moncur, Dundee; Dr. Tuke, Dr. Berry, the Rev. Dr. Donald Macleod, Glasgow, and others.

Mr. J. B. Balfour, in submitting the report, glanced briefly at its main features. The following is a summary of the report:—

The Home.—The work developed so rapidly that the temporary Home in North Charlotte Street became quite insufficient. A main-door house and two flats were purchased, 29 and 30 Castle Terrace, and are arranged for the superintendent and 11 nurses. Seventeen can ultimately be accommodated.

Nurses.—The Council are responsible for 14 nurses.

Local Nursing Associations.—During the year a second nurse has been engaged for Kilmarnock, for Johnstone one, Wemyss one, Dundee three, Galashiels one, and the four next nurses are bespoken for Campbeltown, Port-Glasgow, Lockerbie, and Kirriemuir. In Dundee, a suitable nurses' home has been purchased and furnished; one has also been secured at Kilmarnock.

Nursing in Edinburgh.—During the year 735 cases have been nursed, and 18,273 visits paid. Recovered, 422; transferred to hospitals, 51; died, 151; removed for other causes, 35; still on books, 76—735. The demand for nursing is already beyond what can be overtaken, and the Council greatly desire to increase the staff.

Funds.—An abstract of the receipts and expenditure of the Institute from 31st October, 1889, to 15th October, 1890—which was submitted by Mr. Mowbray Douglas, of Messrs. Forbes, Moncrieff, & Douglas, C.A.—shows that the receipts,

apart from sum in bond over 29 Castle Terrace, amounted to £2,771, 0s. 3d. The ordinary expenditure amounted to £857, 4s. 11d.; and the cost of the home and furniture to £2,910, 2s. 0½d.; from this had to be deducted sum in bond, £1,200; leaving a surplus of £203, 13s. 3½d. Since the report was prepared, the Council had received the sad news of the death of the president, the Countess of Rosebery. At a special meeting on 25th November, a minute relating thereto was passed. It has been already published.

Lord Reay moved the adoption of the report.

The Rev. Dr. Donald Macleod, Glasgow, in seconding the motion, gave an account of the Institute in Glasgow for the nursing of the poor in their own homes. He pointed out that there were fourteen trained nurses, with several probationers, and that last year 1,750 cases had been looked after. The two cities, he said, were at one in carrying on this great work.

NEW DRUGS, INSTRUMENTS, &c.—Denaeyer's Sterilized Liquid Peptone of Meat and Peptonate of Iron are preparations which should receive the careful consideration of medical men in general practice, who are often in need of nutritive preparations which are pleasant and reliable, and of ferruginous tonics which possess all the active properties of iron without the drawback of upsetting the stomach. We can speak from experience of the peptone of meat. When prepared according to the directions given, it forms a delicious and nourishing soup.

We have received from Messrs. Ingram & Royle a sample bottle of Vichy Liqueur. This is a digestive fluid specially prepared from the natural salts of Vichy, and it may be taken before or after meals, or mixed with the Vichy waters. The liqueur is put in neat little black bottles, and is deserving of the notice of our readers.

We have also to direct attention to the "Franz Josef" Aperient Mineral Water. This is rich in sulphate of magnesium and sodium, and is practically tasteless. Medical gentlemen desiring a free sample of the water for examination may have it by sending a post card to the "Franz Josef" Company, 4 Sussex Place, London, E.C.

We have also received specimens of various medical diaries and visiting lists for 1891. Among these, we would specially mention Letts' *Medical Diary* as being very convenient and portable. It is neatly bound in a morocco leather case, and will take up little room in the pocket. The letterpress attached to the diary contains much valuable information.

Messrs. Burroughs, Wellcome & Co. have also forwarded to us a copy of the 1891 edition of their *A.B.C. Medical Diary and Visiting List*. This list has, we believe found much favour from medical men, and the accompanying illustration gives a good idea of it. The book is made to fit into a handsome leather wallet, which may be used from year to year. We have found the diary very useful.



From the same firm we have received numerous preparations of Ichthyol, a drug useful both externally and internally in chronic skin affections and rheumatism. Pills, capsules, soaps, ointments, and plasters of the drug are now in the market, and those supplied by this firm are exceptionally convenient.

The Liquor Carnis Company inform us that, as the result of recent experiments, they are now in a position to state that Caffyn's Liquor Carnis may be taken with hot fluids, wines, &c. Previously they had given instructions that hot fluids and alcohol should be avoided. This company are also sending, post paid, a "Memoranda Tablet" to any medical man who applies for one at their address, 50 Holborn Viaduct, London.

FRENCH SURGICAL CONGRESS.—The Congress will take place at Paris, in the Faculty of Medicine, under the presidency of Professor Guyon, from Monday, 30th March, till Saturday, 4th April, inclusive. Communications should be addressed to Dr. S. Pozzi, General Secretary, care of M. Alcan, Editor of the Congress, 108 Boulevard St. Germain, Paris.

The committee have placed on the programme for the fifth seserunt the following subjects:—

1. Surgical interference in affections of the central nervous system, primary trephining of the skull excepted.

2. After-results of the removal of the uterine appendages, in affections of these organs apart from neoplasms.

3. The various forms of suppurations, examined from the bacteriological and clinical points of view.

The inaugural meeting will take place on Monday, 30th March, at 2 o'clock, in the Grand Amphitheatre of the Faculty.

REVIEWS.

Cyclopædia of the Diseases of Children, Medical and Surgical.

The Articles specially written for the work by American, British, and Canadian Authors. Edited by JOHN M. KEATING, M.D. Vol. III. Illustrated. Philadelphia: J. B. Lippincott Company. 1890.

THE third volume of this *Cyclopædia* deals with Diseases of the Digestive System, of the Genito-urinary Organs, and of the Blood, Surgery, and Diseases of the Osseous System, and of the Joints.

The first article, on Functional Disorders of the Stomach, by Dr. Pepper, of Philadelphia, will be found a very useful one, especially in regard to treatment. We notice that he draws special attention to the condition known as cyclical or recurrent vomiting, which he believes to be much less rare than is commonly supposed. This affection is characterised by attacks of vomiting, recurring at intervals of uncertain length, the subject being in perfect health between them. Such attacks are usually accompanied by severe abdominal pain, and sometimes by high fever. Dr. Pepper ascribes them to a state of nervous depression and irritation, affecting especially the centres and fibres supplying and controlling the stomach and the liver. He regards it as not improbable that these

explosions are immediately due to the development of some irritating ptomaine, and that possibly some of the more definitely cyclic cases are to be referred to a gastric *petit mal*. Various methods of treatment are indicated, among them the use of antipyrin, which seems a most likely drug for such a condition.

Dr. Amory Hare, also of Philadelphia, discusses the Diseases of the Stomach. His remarks on Pyloric Stenosis—a very rare condition—might, we think, have been more full; but his section on Dilatation of the Stomach is all that could be desired. In the latter, we note with pleasure that Dr. Hare condemns distension of the stomach with carbonic acid gas as a means of diagnosis, and he is equally opposed to some of the other methods in use at the Continental schools.

The Diarrhœal Diseases, acute and chronic, are very fully treated of by Dr. Emmett Holt, of New York. Our readers will appreciate the thoroughness of this essay from a consideration of the various headings, from which, however, it will be noted that Dysentery is absent, Dr. Holt discarding that term, as he holds that none of the so-called dysenteric symptoms are characteristic of a disease seated only in the large intestine. After a full discussion of the general etiology, and of the relation of Bacteria to the Diarrhœal diseases, Dr. Holt gives the best description of their pathological anatomy with which we are acquainted, based entirely on his own observations, and beautifully illustrated with photographs of diseased intestine, and lithographs of microscopic sections. We have next a section on the examination of the stools, followed by one on general prophylaxis, and by four more on the clinical varieties of diarrhœal disease.

In Volume I of this work the subject of Bacteriology received special treatment, and in the essay just mentioned, the influence of bacteria in the production of diarrhœal diseases was insisted on by Dr. Holt; but the importance of the subject in reference to diseases of children has been looked upon as such that a separate essay on the Intestinal Bacteria of Children, from the pen of Dr. Wm. D. Booker, Baltimore, finds space in this section of the work. In it he deals with both the physiological and the pathological effects of these bacteria, and the reader will here find some useful information as to the changes undergone by foods in passing through the intestinal tract.

After a section on Acute and Chronic Constipation, we have a paper by Jacobi on *Tabes Mesenterica*, of a somewhat disappointing nature. The key-note of the paper is given in

the following sentence:—"The following pages will be dedicated to showing that the pathological anatomy of mesenteric tabes is by no means the same in all cases, and that the term itself ought either to disappear entirely from our indexes, or be recognized as merely a convenient expression for a complex of more or less similar symptoms" (p. 208). Cases of this kind are so common that we would have been glad if Dr. Jacobi had expanded his remarks, and gone more fully into the description of the various forms, and in particular, of the most common variety, tubercular peritonitis. Of the latter we are glad to see that he takes a more hopeful view than has often been done, and he remarks with some incisiveness that "this capability of recovery, with which the experienced practitioner and pathologist has long been acquainted, has surprised the surgeons, now and then, who opened the abdomen under a mistaken diagnosis, found tubercular peritonitis, sewed up again, and concluded that when the patient recovered, it was because, and not in spite of, their uncalled for operation" (p. 212). He seems to us, however, to lay far too much stress on the involvement of the mesenteric glands, which in our experience is almost never a fact of clinical importance. He has nothing new to say as to treatment.

Parasites and Hernia are disposed of somewhat briefly, and then we have an interesting article on Intestinal Obstruction, by Dr. W. W. Keen, of Philadelphia. He favours early operative treatment, and, in many cases, he would open the bowel above the seat of obstruction so as to get quit of its contents before searching for the seat of lesion, a practice which we believe is coming into vogue. In regard to the treatment of volvulus after laparotomy, he makes two suggestions which are worth the consideration of surgeons—"I would suggest, as an improvement, that either the untwisted volvulus be sewed fast to the belly-wall at two or three points, so as to prevent its re-twisting, or, perhaps even better, that lateral anastomosis of the intestine be done above and below the volvulus, by Senn's bone-plates, Abbe's catgut rings, or other similar means, with re-section of the twisted portion of the gut if its life is endangered" (p. 251). Intussusception is well set before us, and the pros and the cons of its treatment by dilatation with water and with air are fully discussed, while detailed instructions are given for the performance of laparotomy, when that is necessary, *i.e.*, when other remedial measures have failed in acute cases.

Ashby, of Manchester, follows with an article on Peritonitis, both acute and chronic, and dealing with the disease as

occurring in intra-uterine life, in the new-born child, and in infancy and childhood. The essay is rendered all the more valuable by the introduction of a few typical cases, but the paper might have been extended with great advantage.

Perityphlitis, Paratyphlitis, and Perityphlitic Abscess form the subject of an elaborate paper by Dr. Fenger, Chicago, who gives very valuable information on the etiology, pathological anatomy, and whole course of these diseases. There is also full information as to treatment, operative and otherwise; and many statistical tables and a good bibliography add value to the paper.

Congenital Malformations of the Intestine, with special reference to diseases of the rectum and anus, receive full attention, and are well illustrated by woodcuts.

A paper which will be read with much interest, is that by Senn, of Milwaukee, on Diseases of the Pancreas and their operative treatment. It is very thorough, going into anatomical and physiological details as fully as can be done in the present state of our knowledge of that viscus, and discussing the diseases of the organ and their treatment in a way that clearly indicates how much personal attention and experimental investigation the author has devoted to the subject. This article, however, like many others in this Cyclopædia, might as well have appeared in any cyclopædia of medicine or surgery, for it has little special reference to the diseases of children, and indeed it may be looked upon as probably the best and largest article on the subject in existence, being almost twice as large as that in Pepper's *System of Medicine*.

Part I concludes with a series of articles on diseases of the liver, functional disorders, jaundice, enlargements of the liver, contractions of the liver and ascites.

Part II, extending to some 240 pages, is devoted to the Diseases of the Genito-urinary Organs, and embraces articles on their various abnormalities, as well as upon their diseases. The article on Bright's Disease is by Goodhart, of London, and, like his other work, bears the impress of individual observation.

Then follows a most elaborate article on Diseases of the Blood and Blood-making Apparatus by Dr. J. P. Crozer Griffith, Philadelphia.

Surgery is dealt with in Part III, including minor surgery and emergencies, plastic surgery, wounds, and anæsthetics; the latter by Dr. Allis, whose inhaler is so well known. For children he prefers chloroform, but, like most administrators, he lays great stress on the mode of administration.

Diseases of the Osseous System and of the Joints are included in Part IV, which, occupying more than 400 pages, forms nearly one-third of this volume. We can only indicate the various sections:—Congenital Abnormalities of the Extremities; Congenital Dislocations; Club-foot; Torticollis; Acute Inflammation of Bone (by Dr. Macewen); Lateral and Functional Curvatures of the Spine; Pott's Disease; Fractures and Dislocations; Synovitis; Diseases of the Major and of the Minor Articulations; Ankylosis; Deformities of Bone, Osteoclasia and Osteotomy; Mechanical Treatment of Deformities of Infantile Paralysis; and Amputations. From this list it is evident that there is much of general interest in these pages, and we think that this volume as a whole more than justifies the editor for having embraced both medical and surgical diseases in his *Cyclopædia*, a combination rarely met with in works published in this country. It may, however, be noted in this connection that, so far as we can gather, there is not in America, at least in the case of those who mainly devote themselves to the treatment of children, the same specialisation into physicians and surgeons to which we are accustomed.

Evidences of the Communicability of Consumption. By G. A. HERON, M.D. (Glas.) London: Longmans, Green & Co. 1890.

WE welcome this volume from the pen of a Glasgow graduate on a subject which is only now attracting the attention which it deserves. The book ought perhaps to have had in its title Tuberculosis instead of Consumption. The latter term is usually employed for tuberculosis of the lungs, but the author by no means confines himself to that disease; the greater part of it, indeed, having reference to tuberculosis in general.

We have here a fair and full statement of the facts bearing on the communicability of tuberculosis, whether from animals to man, or from man to man. The value of it is considerably increased by a list, furnished by Professor Koch, of papers in which specific cases of communication are recorded.

We do not propose to give a full account of the volume, but will direct the reader's attention to a few of the points considered. One of these is the question of the communication of tuberculosis by the breath of consumptive patients. The conclusion come to, as a result of experiment, seems to be that the mere breath of a consumptive patient is not dangerous, as the bacilli are not carried from the lungs by the breath. But

in coughing there are often pellets of mucus expelled, and these, like other parts of the sputum, contain bacilli, and are infective. On the other hand, the sputum of patients, when allowed to dry on the floor, in handkerchiefs, and otherwise, is highly dangerous. In order to test this, the dust of rooms inhabited by tubercular patients has been frequently examined. Cornet carried on a set of observations of this kind for two years, testing the dust obtained, by cultivation in broth and subsequent inoculation of animals. His results were, generally, that, where patients were in the habit of spitting on the floor or into handkerchiefs, bacilli were found, but where spittoons were used, as in hospitals, and proper precautions were observed, bacilli were seldom found.

Another matter of interest is as to the possibility of infection by the flesh of animals. The author refers to the fact that, although the tuberculosis at any particular time may be local, yet there is, in a considerable number of cases, an infection of other organs. He has failed to observe a fact strongly bearing on this subject which is mentioned by Coats in his *Lectures on Phthisis Pulmonalis*. This author says that the liver in phthisis not infrequently contains tubercles which are invisible to the naked eye, and he cites this as evidence that in local tuberculosis there is not uncommonly a limited extension by the blood which, however, stops short of a general tuberculosis. It is clear that this fact has an important bearing on the possibility of bacilli being present in the flesh of animals which only show signs of a local tuberculosis.

In regard to the alleged immunity of the Jews, it is interesting to observe that although this race, from the strictness of the sanitary precautions enjoined by their religion, is in general unusually healthy, yet that "the figures quoted show that tuberculosis is not so uncommon amongst them as has been supposed."

The prophylaxis of tuberculosis forms the concluding chapter in the book. It is acknowledged that the logical consequence of the evidence adduced leads to the conclusion that every man, woman, or child who is tubercular ought to be isolated from the general community. The author does not think, however, that this, even if possible, is at all necessary. He would let it be a part of the education of every person, and especially of all persons affected with tuberculosis, that this disease is a highly infectious one, and that all discharges and expectorations contain the active virus. If this belief were thoroughly impressed in the minds of the community then it would be easy to

enforce precautions to prevent the spread of the infection. Our author suggests some of the precautions, such as holding a handkerchief before the mouth in coughing, disinfection of handkerchiefs by perchloride of mercury, &c. He has a strong belief that, as the great system of antiseptics introduced by Lister has led to the use of precautions which have virtually banished septic processes from our hospitals, so Koch's discovery will lead to the banishment of tuberculosis, and he emphasises the responsibility of the medical profession in this matter.

The appendix furnished by Koch consists, of the summaries of 77 papers in which evidences are furnished of the communicability of tuberculosis. As the papers frequently contain several cases, the numbers of actually recorded observations are considerably greater. The dates of these records are interesting. Koch's great discovery was made in 1882. We find that from 1867 till 1881, or in fifteen years there were only thirteen records published. But in 1882 there were five; in 1883, five; in 1884, four; in 1885, eleven; in 1886, thirteen; in 1887, seven; in 1888, seven; in 1889, ten; or sixty-three records in the eight years since the discovery was made.

Sterility in Women, including its Causation and Treatment.

By ARTHUR W. EDIS, M.D. Lond., F.R.C.P., &c. London: H. K. Lewis. 1890.

STERILITY is not a term usually applied to the male sex, but Dr. Edis has thought it necessary to entitle his book *Sterility in Women*. Even this title, however, in spite of its evident effort after careful definition, is far from correctly designating this little book. It is a treatise on sterility something in the manner of the play without Hamlet. The subject of sterility is dismissed in 19 pages and the rest of the book is occupied with a description of the more frequent causes of sterility and the method of dealing with them. These conditions include ante flexion, retro flexion, granular degeneration of cervix, &c., and are mostly discussed without the slightest reference to sterility. The chapters on these subjects are in fact really extracts from the *Manual of Diseases of Women*, written some years ago by Dr. Edis, and are republished here simply by "turning up the shafts," a mode no doubt easy for Dr. Edis, but not satisfactory to his readers. When, for example, you are referred to Fig. 25, you will not find it in this book, but if you have the *Manual* you will find it there.

His *Manual* was, in its time, a very good one, but was written in the old style of giving no reference to sources of original information, and of making *ex cathedra* statements with no authority beyond mere surmise. We had hoped that this style of manual was becoming extinct; but every now and then we are met by a survivor of the species, and Dr. Edis, in this book, continues its existence.

For example, when he says (p. 2)—“It has been proved conclusively that men in robust health, where impotence is out of the question, the sexual act being perfectly accomplished, may have no living spermatozoa in their spermatic fluid.” He ought to adduce or at least refer his reader to this “conclusive” proof.

Again, when he says (p. 2)—“There may be a physiological incompatibility, a relative, not an actual sterility,” and bases this on the two facts—(1) that a husband and wife may live together without family for many years, and then “without apparently any alteration in the conditions” pregnancy ensues; and (2) that a wife, sterile with a husband who himself has had children by a former wife, conceives at once when she marries another husband,” we feel that the basis of his hypothesis is most insecure, and, in the absence of full reports of cases, quite unsupported. In both cases it is more probable that the temporary sterility had a pathological origin, and that “physiological incompatibility” is, if not inconceivable, at least most unlikely.

In discussing the pathology of the various conditions which, in his opinion, cause sterility, Dr. Edis has the same loose way of making unsupported assertions. Thus (p. 12)—“The ovaries may be so imperfectly nourished, from the general health being so debilitated, that the maturation of ova is arrested for the time being” . . . “The ovum itself may degenerate in the Graafian sac and never be expelled.” What evidence has Dr. Edis to show in support of such assertions? They are samples of the positive affirmations which hinder instead of advancing the progress of knowledge. No such statements should ever be made till the author has found examples of ova arrested by debility or degenerated in the Graafian sacs. Had he examined, for example, the ovaries of a girl in advanced phthisis, his one examination would have blown his theory to the winds.

In the discussion of the conditions causing sterility, there is hardly a pretence of completeness, and in regard to treatment, we are far from approving all the procedures recommended here. The intrauterine stem, for example, is far

too frequently advised, and, while the author gives directions for the use of syringes and pessaries, for the application of dry powders and liquid caustics to the cervix, there is no mention whatever of the most efficacious and simple means of treating endometritis—the curette. Indeed, the only reference to the curette in the whole book is in the narrative of one of the cases where it is merely said that after dilatation “the uterine cavity was curetted.”

Neither as adding to our knowledge of sterility, nor as advancing its treatment, can we consider this book at all so satisfactory as we feel Dr. Edis could have made it. Its failure is, in our opinion, largely due to the fact that Dr. Edis has merely republished what he wrote years ago, and has not given the subject a fresh and matured consideration.

Anatomy: Descriptive and Surgical. By HENRY GRAY, F.R.S.
Twelfth edition. Edited by T. PICKERING PICK. London:
Longmans, Green & Co. 1890.

THAT *Gray's Anatomy* still retains its well deserved popularity is attested by the fact that it is only two years since the previous edition appeared. In reviewing that edition in the pages of this *Journal*, we called attention to the absence of any satisfactory description of the arterial supply of the brain, to the omission of any reference to the position of the convolutions of the brain in their relation to the exterior of the skull, and to the baldness and general inadequacy of any allusions to points of surface anatomy. We are pleased to find that such strictures are not now called for; indeed, in regard to the last particular, the editor has run into the opposite extreme, of very minute and even prolix description; that of the surface markings of the arm occupying two pages of very small print, and of the lower extremity a page and a half. We regret that our comment on Fig. 408 appears to have escaped editorial notice, so that it still happens that what figures on one side of the diagram as *temporo-sphenoidal lobe* is on the other side *parietal lobe*. The adoption of Sömmerring's classification of the cranial nerves, which makes the hypoglossal nerve the twelfth, instead of the ninth (as formerly), necessitates the change of title of the *descendens noni* to *descendens cervicis*, and we are surprised that Mr. Pick has not had the courage to make the necessary correction. Although the sections on surgical anatomy and surface markings have been printed in small type, the additions in

this department have been so numerous as to increase the size of the book by fifty pages, notwithstanding which, it has not the appearance of being more bulky or unwieldy than when first issued by Mr. Gray himself; so great has been the improvement in the production of paper and in printing in recent years. *Gray's Anatomy* has always been a model of orderly and accurate description, and has been a favourite with students because of its numerous and clear diagrams; in these respects the new edition fully maintains the reputation of the old ones.

MEETINGS OF SOCIETIES.

GLASGOW PATHOLOGICAL AND CLINICAL SOCIETY.

SESSION 1890-91.

MEETING I.—13TH OCTOBER, 1890.

The President, DR. DAVID NEWMAN, in the Chair.

I.—AN EYE ENUCLEATED FOR RECENT INJURY.

BY MR. FREELAND FERGUS.

Mr. Fergus showed an eye which had been enucleated for foreign body. The patient was a lunatic who had pushed a needle right through his cornea. When the patient was first seen, the whole of the orbital tissues were much inflamed, the margin of the cornea being buried beneath the swollen conjunctiva. There was no trace of the needle, but the history of the accident was very clear.

Mr. Fergus thought that the eye required immediate enucleation, and in that opinion he was confirmed by Dr. Cameron, who was present.

The eye was easily removed, and the needle was found sticking out behind the sclerotic. The orbit was washed out with bichloride, and dressed with iodoform; and was reported to have healed well.

Mr. Fergus stated that he had no hesitation in removing the eye at that stage; but that had the eye been filled with pus he would have hesitated in so far as those cases of death after enucleation had very often been when an eye was enucleated

for purulent inflammation. So far as his experience went, he had not seen any fatal result from having an eye filled with pus alone. This was not quite what might have been expected, still he believed that these were the facts.

Dr. Rutherford called attention to the circumstance that when an eye was injured and atrophied from purulent inflammation, there was little fear of sympathetic ophthalmia, which was most probably due to the lymphatics of the optic nerve being closed by the inflammation.

II.—A CASE IN WHICH VAN MILLINGEN'S OPERATION FOR TRICHIASIS WAS PERFORMED.

BY MR. FREELAND FERGUS.

Mr. Fergus also showed a case in which he had performed a Van Millingen's operation for trichiasis. He had crossed to Dublin to see the operation as performed by Dr. Benson. Mr. Fergus had since performed the operation some eight times, and had been much satisfied with the results, although in two cases at which he had assisted there had been sloughing. Before he had seen this operation he had always performed Snellen's, which he had often seen performed by Dr. Snellen in Utrecht.

The difference of these two operations Mr. Fergus briefly stated as follows:—

In Snellen's a wedge-shaped portion is removed right along the eyelid, the base of the wedge corresponding with the cutaneous surface, and the apex of the wedge being directed towards the conjunctiva.

On suturing, the margin of the lid was everted. This operation is possibly still the best when the lid is of normal length, and when there is much curving inwards of the tarsal cartilage. The objection to it, as a general operation, was that a considerable amount of tissue required to be removed, and thus the lid was shortened.

The advantage of Van Millingen's was that instead of taking a piece out of the lid there was something added to it.

This operation was performed by dividing the margin of the lid right along its entire length, the hairs and their bulbs being included in the anterior portion. To prevent the flaps adhering, a piece of mucous membrane is removed from the lip and carefully stitched into the gaping wound.

III.—The PRESIDENT showed a case of congenital deformity of the lower limbs of a child.

IV.—HÆMOPTYSIS OCCURRING IN APPARENTLY HEALTHY PERSONS.

BY DR. NEWMAN.

The President delivered an address on Hæmoptysis occurring in Apparently Healthy Persons (see vol. xxxiv, p. 363).

Professor Gairdner, in moving a vote of thanks to Dr. Newman, spoke of the nicety of observation which had been exercised in the record and conduct of the cases described, and of their bearing on the *quæstio vexata* of *phthisis ab hæmoptœe*.

OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.

SESSION 1890-91.

MEETING II.—26TH NOVEMBER, 1890.

The President, DR. ROBERT PARK, in the Chair.

I.—MICROSCOPIC PREPARATIONS.

BY DR. MILROY.

Dr. Milroy shewed several beautiful microscopic preparations, made from the cancerous uterus, which Dr. Stuart Nairne had exhibited at the last meeting. In his remarks, Dr. Milroy pronounced the tumour to be a very malignant form of sarcoma, and pointed out that the sections illustrated very clearly how such tumours spread by means of spider-like cells, which projected into the blood spaces, becoming detached and carried on by the blood stream.

II.—PUERPERAL ECLAMPSIA.

BY DR. ROBERT JARDINE.

Dr. Robert Jardine read a paper on puerperal eclampsia, giving details of a case, and discussing the whole subject at great length. The patient, a primipara, aged 30, had one fit at the onset of labour, and after recovering from it was completely blind until delivery was completed, some hours subsequently, by means of forceps. Albumen was present in the urine in large quantity, and she was very œdematous, but the œdema and albumen both disappeared within a week. She made a good recovery, except that her eyesight remained

affected to a slight extent. She became pregnant a few months afterwards, and this pregnancy lasted until the three hundred and fifth day from the cessation of menstruation. The external os was found to be completely occluded at her second confinement, and it was found necessary to incise it before delivery could be effected. Dr. Jardine read notes of this pregnancy at the last meeting of the Society last summer.

While not attempting to advance any new theory as to the causation of eclampsia, the writer pointed out the great similarity between these convulsions and those of children, especially in those cases where the urine is normal. He quoted many cases from various authors shewing that uræmia was not by any means always present. In these cases, shock to the nervous system, irritation of the alimentary tract, or of the uterus, &c., is generally the immediate cause, acting upon a highly strung nervous system, and causing an explosion or nerve storm.

The paper was very favourably commented upon by Drs. Sloan, Cameron, St. Clair Gray, Richmond, Cullen, and the President, and Dr. Jardine replied.

The Hon. President, Professor Lawson Tait, will deliver an address at the first meeting in 1891.

EXTRAORDINARY MEETING—2ND DECEMBER, 1890.

At an extraordinary meeting of the Society, called to consider the Midwives' Registration Bill, it was unanimously resolved—

"That, while approving generally of the said Bill, this Society recommends that there be inserted in the Bill clauses to provide—

"1. For the efficient supervision of midwives by a registered medical practitioner, to be appointed by the County Council.

"2. For erasing from the midwives' register the names of women, and for suspending any women for acting as midwives, who have unwarrantably delayed, or failed to send for a registered medical practitioner when the labour is, or has become abnormal."

ABSTRACTS FROM CURRENT MEDICAL LITERATURE.

SURGERY.

By HENRY RUTHERFURD, M.B.

Reproduction of the Entire Ungual Phalanx of the Thumb by a Single Bone Graft. By Sherman, of San Francisco (*Pacific Med. Journ.*, June, 1889).—A boy, aged 13, had injured his thumb with a large awl in such a way that nearly the whole of the unguinal phalanx was found hanging outside the wound, only very slightly attached to the flexor tendon. The bone was removed, and the thumb dressed antiseptically. The wound was healing well, but the joint was formless and useless. Sherman removed the scapula of a puppy, and cut out a portion of it to the shape of the lost bone, and in such a way as to include bone, cartilage, and ossifying centre in the graft. This was transplanted into the wound, and soon formed adhesions with the fragment of the phalanx that had been preserved, and with the tendons. The result was good, the boy being able to move the joint through an angle of 45°.—(*Centralbl. f. Chir.*, 1st March, 1890).—D. M'P.

Tumours in Animals. Translation of an abstract in the *Centralbl. f. Chir.*, 22nd March, 1890, of an article by Plique in *Rev. de Chir.*, No. 7, 1889.—Perusal of this article is extremely interesting, not only from the numerous close analogies shown to problems of practical medicine, but from the valuable bearings of the facts on the solution of these problems.

The author discusses first the etiology of tumours. The proximate cause of their formation is unknown even in animals, further, at least, than that we are bound to admit a special "disposition" to tumour formation; but some facts are more certainly known with regard to exciting causes. Thus we know, for instance, that cancer of the lip, which in man is almost invariably on the lower lip, appears in horses at the commissure of the lips, and in cats upon the upper lip; and it seems clear that in horses its seat is determined by pressure of the bit, and in cats by repeated injuries of the upper lip while eating smaller animals. So also in horses we attribute the formation of subcutaneous fibroma to pressure from the harness. Local injury is so often met with in this connection that we are bound to consider, as an active cause, whether it be single or oft repeated.

The etiological influence of previous inflammation is also striking in tumours of animals. Among other instances, we see that in dogs the females suffer from carcinoma of the mamma much more frequently than males, and that the posterior glands are much more apt to be affected than the anterior. The author points out the significance of these facts in the light of the well known fact that it is the posterior mammae that are most frequently inflamed. The agreement with the conditions in the human subject is striking. That numerous pregnancies dispose to subsequent formation of cancer is not true in bitches. On the contrary, it is noted that barren animals suffer more frequently from cancer of the mamma than multiparous ones; the apparent difference here from the conditions in the human species is explained by the fact that in bitches the period of heat, even when there is no impregnation, is always associated with marked congestion of the mamma, which may even lead to the secretion of milk.

As a hereditary form among the tumours of animals, there may be mentioned melanosis in horses. It is so certainly hereditary that animals affected with it are not allowed to breed. The inheritance of mammary cancer in bitches

is also significant. From the frequency of this disease, the author believes it might be possible, by careful selection, to raise a cancerous breed.

The influence of age is in animals even more marked than in man. While young animals enjoy almost complete immunity, in aged animals, as in dogs for instance, cancer is very common. That the same cannot be said of other domestic animals is probably due to the fact that most of them are killed for food before they reach old age.

Whether the food of animals has any influence upon the disposition to tumour formation, as has been said to be the case in man, it is very difficult to determine. At first sight it seems significant that among carnivora, such as dogs, cancer is very common, while in cattle and swine it is rare. But it must not be forgotten that the lives of the latter animals are usually terminated intentionally before they reach the age when cancer is most likely to form. And it must be remembered that herbivora, such as horses, which are allowed to grow old, not seldom suffer from cancer.

In the second section the author reviews the occurrence and localisation of benign and malignant tumours in animals. This, as being less interesting to us, we may pass over. The therapeutic results of treatment of tumours in animals are of secondary importance, because veterinary practitioners' hands are tied by consideration of the comparatively small value of animals' lives. Even the most promising treatment will be refused, or if begun, then abandoned if the cost of it threatens to exceed the value of the animal. The numerous attempts to remove new formations by internal indication are very instructive; the use of iodide of potassium, arsenious acid, &c., in doses which appear inconceivable to us, have given numerous unlooked-for results, and their action should be still further tested by veterinary practitioners.—D. M.P.

Ligature of the Nutrient Arteries in Goitre.—Rydygier reports on 21 cases treated by him by this method. Nothing short of simultaneous ligature of the superior and inferior thyroids on both sides will suffice in the majority of cases, despite the good results in certain cases by Porta and Wölfler. Even in the normal state the communication between the superior and inferior on each side is very free; and when the thyroid gland is enlarged, the anastomosis across the middle line is free also. Kocher's proposal to tie first the vessels of one side, and then at a later date those of the other, only if the first operation is without the desired effect, is to be rejected—(1) because in the meantime the collateral circulation will in all probability have greatly developed, and (2) because experience has shown that simultaneous ligature on both sides does not involve the risk either of gangrene of the gland or of the cachexia strumipriva. Rydygier does not think that complete atrophy of the gland takes place even when the most satisfactory results are obtained, and refers to one patient who was enabled by the operation to serve in the army, and in whom careful palpation enabled him to ascertain that something of the gland remained.

As regards the varieties of goitre in relation to this operation, no effect can be looked for in the fibrous form (struma fibrosa), inasmuch as the interference with blood supply may be expected to accelerate the degeneration of the glandular elements, which will be only the more quickly replaced by cicatricial tissue. But supposing the tumour already to consist, for the most part, of cicatricial tissue, there will at all events be no further contraction.

The prospect is no better in cystic goitre. Billroth has suggested that possibly after ligature cysts might disappear by increased absorption; but Rydygier has not seen this in his cases, and, indeed, his experience is rather to the opposite effect—at all events, he has seen cysts make their appearance after operation in the but slightly shrunken tumour, which previously were not perceptible.

In struma gelatinosa (large cysts) the subjective symptoms (dyspnoea, &c.) were relieved, yet in the large tumours not much diminution of bulk was obtained.

The best results were in cases of parenchymatous (adenomatous) tumours of

medium size, and of recent origin—that is to say, when the glandular tissue had not to any extent undergone degeneration. These diminished rapidly in bulk, and in many cases the parts were restored to a practically normal condition. In this class of case the results were specially gratifying in their being vascular cases.—(*Arch. für Klin. Chir.*, Bd. 40, Hft. 4.)

Perityphlitis.—Schuchardt (Stettin), reports on nine cases treated in the course of twelve months. One young man of 20, who refused all intervention, died at the end of eight days of generalised peritonitis; in five cases treated by radical operation recovery took place, as also in three other cases operated on for relief of the condition. In each case there was a large foetid abscess in the retrocæcal tissue, and in no case was the operator able to find any fecal concretion of the vermiform appendage in the abscess cavity. He cannot admit that the affection is almost always dependent on ulceration or perforation of the appendix, but thinks that it is often a pericæcal phlegmon, without (gross ?) lesion or direct communication with the intestine.

Graser (Erlangen), believes that almost all the affections included under the names of, typhlitis, perityphlitis, and paratyphlitis, are due, in the majority of cases, to lesions of the appendix, which ulcerates and becomes perforated as a result of the presence of a foreign body, or a fecal concretion. Danger is greater in young subjects. Perforation into the peritoneum is no longer to be considered absolutely hopeless. Graser reports three cases in children, operated on with success, in one of whom there had resulted a diffuse purulent peritonitis, while in the other two it was circumscribed.

Kümmell (Hamburg), distinguishes three clinical forms of the affection—(1) where it wears the aspect of a perforation peritonitis, with fulminating symptoms, due in fact to perforation of the appendix; (2) the largest group, characterised by abscess formation. Here, as early as possible, the abscess is to be opened and the appendix removed if found. No risks, however, are to be run in separating protective adhesions in a search for the appendix. (3) The third group is composed of those cases where symptoms recur on any slight error of diet or trifling injury. Those in fact, according to Krimmell, which relapse most frequently are those which do not result in abscess formation, but in the production of adhesions. It is for these cases especially that the author recommends resection of the appendix as the only thing that can secure complete recovery. The operation is to be done when the acute symptoms have subsided, and when exudations have been re-absorbed. The peritoneum is opened by an incision as for ligature of the external iliac; the adhesions are to be torn and the appendix sought for. It is then resected close to the cæcum, and its lumen closed by invagination.—(*Proc. German Surgical Congress*, April, 1890; *Rev. de Chir.*, September, 1890.)

Reclus (*Proc. Soc. de Chirurgie*) narrates three cases treated by operation for the acute symptoms, with two recoveries. The fatal case was in a boy of 15, operation on the fourth day. Incision parallel to Ponpart's ligament, and two cm. above it. Large tense abscess cavity opened immediately the fascia transversalis was divided, and another behind the cæcum, opened in separating the appendix. Both cavities shut off from peritoneal cavity by adhesions. Death 18 hours later. The autopsy showed general peritonitis.

Reclus divides the cases broadly into those in which the peritonitis resulting from perforation of the appendix is localised or general. In the former he recommends incision as above. If this should show that there is a general peritonitis, he would proceed to do median abdominal section, so as to be able to purify the peritoneal cavity.

The operation may have to be modified to deal with special forms of abscess—(1) the commonest form is the ilio-inguinal (19 out of 20). (2) Another is the anterior, in which the adhesions of the abscess form along a line between the A.S. spine of the ilium and the umbilicus. In these cases there is always a prominence which shows where the incision is to be made. (3) In the posterior type, the abscess points posteriorly over the crest of the ilium. The anterior and posterior forms may co-exist. (4) The abscess may project into the

rectum. (5) Finally, the abscess may form between agglutinated loops of small intestine, in which case the incision is to be median.

There still remains the question of procedure when we have diagnosed appendicitis, but before perforation has occurred, and when the only symptom is pain. Reclus points out that all cases of appendicitis do not inevitably end in perforation, and that ablation of the appendix is itself not free from danger. Only after one or more relapses, or in presence of signs threatening perforation, would he proceed to this operation. He acknowledges the good results obtained by the operation in the hands of various surgeons in other countries.—(*Rev. de Chir.*, September, 1890.)

Motor Paralysis Resulting from the Hypodermic Injection of Ether.—Mr. David Wallace records two cases (one of which occurred in the practice of Professor Chiene), in both of which the muscles involved were those supplied by the posterior interosseous branch of the musculo-spiral nerve. In both cases the condition made its appearance within 24 hours of an injection of 20 minims of ether sulphuricus into the back of the fore-arm, which, on the emergency, had been taken as the most readily accessible part of the body. In one case, despite early and assiduous treatment by massage, blistering, and galvanism, recovery was only very incomplete at the end of three months. Careful search has only brought to light one other observation on the subject (*Rev. de Méd.*, Bordeaux, 1881-82—four cases). Conclusions—(1) paralysis may be caused by the injection of ether deeply into the muscles; (2) Prognosis is favourable, though recovery may be long delayed; (3) Galvanism hastens the cure in a very marked fashion; it is desirable to introduce the ether subcutaneously, but, if it be decided to put it deeply into muscle, a fleshy muscle should be chosen, such as the gluteus maximus, where there is less likelihood of the ether, in concentrated form, reaching nerve branches of any considerable importance.—(*Edin. Med. Jour.*, September, 1890.)

The Bloodless, Forcible Correction of Club-Foot.—König referring to his own earlier attempts in this direction, points out that there is now a reaction against the processes of excision of the astragalus, &c., and these he associates with a certain exuberance of operative activity under the stimulus of antiseptics. Even those who think the use of the knife necessary, are for the most part, and to a growing extent, in favour of the open division of tense structures and forcible correction (Phelp's operation). For the reintroduction and general issues of the bloodless method, much has been done by Julius Wolff. König himself has of late operated as a rule by this method, both in children, at the age of puberty, and at the end of the period of growth, indifferently in cases of congenital or acquired deformity.

The most hopeful cases are those at the age of puberty; the actual shape or so-called degree of the deformity is no index of the possibilities of treatment. Not this, but the rigidity or plasticity (*Brüchigkeit*) of the bones determines the issue of treatment, and the peculiarities of the articular apparatus cannot be recognised by the appearances, any more than by a plaster cast. In cases of pronounced deformity the correction seldom succeeds at one sitting, but for the most part two or three suffice. In general the most troublesome cases are those of very young children, on account of the elastic resistance of the mostly cartilaginous bones.

As preliminary operation to the forcible correction of bones, there is usually required one tenotomy, that of the tendo Achillis; sometimes it is also necessary to divide subcutaneously the plantar fascia.

What of these is required is done under chloroform, and forthwith the forcible correction is proceeded with. The patient being turned on his side, the operator grasps the anterior half of the foot with the one hand, and the region of the os calcis and astragalus with the other, and brings the weight of his body to bear on the foot, whose outer surface rests on a block with prominent padded angle. The exact part of the outer surface of the foot which rests on the edge of the block will vary with the particular case, and it is often of value

to change the point of application in a given case. In marked pointing of the foot, dependent on obliquity of the neck of the astragalus, it is sometimes necessary to get the resistance applied to the neck of the bone dorsally, and make dorsal flexion against this. All this involves rupture of ligaments and crushing of bones.

Next, the patient is turned on his back, and with the knee in extension, further correction of the deformity is carried out by manipulating the anterior half of the foot in the direction of dorsiflexion and abduction.

The results of the manipulations are to be preserved by a comparatively light dressing, not like the old plaster apparatus, which itself is a means to the correcting of the deformity.

Rupture of the skin on the plantar aspect is to be carefully avoided, as even when it has healed, it is liable to recur on further manipulations. It may be guarded against by sliding the skin in this direction.

Many cases in the new born are, it is to be noted, amenable to treatment by regular movements and nightly application of splints, without recourse to the procedure described.

Great nicety and firmness of touch is required, more especially with the feet of very young children. The best and most adaptable instruments are the hands.—(*Arch. für Klin.-Chir.*, Bd. 40, Hft. 4.)

DISEASES OF THE THROAT.

By JOHN MACINTYRE, M.B.

Progressive Immobility of One Cord, and its Value in Diagnosis.—Dr. Hunter Mackenzie, of Edinburgh, at a meeting of the British Laryngological Association, last month, brought up this interesting question. To those engaged in the practice of laryngeal disease, the difficulty of early diagnosis is evident, particularly in cases of doubt about malignancy. His thesis was that when in an affection of vocal cord, whether from thickening, ulceration, or distinct growth, the mobility of the cord was gradually impaired in its respiratory, and secondly in its phonetic aspect; then the presence of grave organic mischief was probable. He related several cases in support of his contention, and his observations have now been made over a considerable period.—(*Medical Press and Circular*, 17th December, 1890.)

Unrecognised Impaction of the Teeth in the Larynx for Twenty-two Months.—Mr. Lennox Browne records the case of a lady who was brought to him suffering from an affection of the throat. He was asked to diagnose between cancer and laryngeal phthisis. On looking down the throat, he saw impacted across the larynx, fixed in each hyoid fossæ, what he took to be a plate of artificial teeth. Chloroform was administered, and with a pair of rectangular forceps the teeth were easily extracted. The operation was followed by violent paroxysms of dyspnoea.

The history is that the patient woke up one morning about 23 months ago, with vomiting and dyspnoea, which continued for 36 hours. When she recovered somewhat she inquired after her teeth, but as they could not be found it was assumed that they had fallen into the vomited matter and been thrown away.—(*Med. Press and Circular*, 17th December, 1890.)

Koch's Treatment in Phthisis Laryngea.—It is premature to speculate upon the advantages which this method of treatment will have over many of the others at present being tried. Those who have been engaged in the treatment of this difficult and widespread affection, are well aware that many workers have been anxiously engaged in trying to ameliorate, if not to cure, such cases. From the references to current literature in this *Journal*,

the readers must know that cases, by early detection, and active surgical interference, have been promising more during the last two or three years than previously. It is quite clear, from the reports from Berlin, that the intralaryngeal conditions, which are detectable by the laryngoscope, are not always the only ones. The injection of Koch's fluid brings out, as in other parts of the body, lesions which the eye could not detect. The remedy is now being tried in this country, in throat affections, in London, by Sir Morrell Mackenzie and Mr. Lennox Browne; by Drs. Wood Smith, Steven, and Workman, in Glasgow; and others in Edinburgh. The reports of these cases will soon be made known. It is satisfactory to know that this treatment has not proved very dangerous as yet by causing obstruction to the breathing owing to local swellings. One case of stenosis is said to have required tracheotomy, but it is an open question where, in consideration of the limited time which the reaction takes to pass away, whether intubation would not meet the requirements of the case. So far, the reports from all quarters show that the cases are exhibiting the usual reactions and progressing. About the curative effects nothing in the meantime can be said.

The statements by Mr. Lennox Browne, who has visited the Berlin clinics, with the special object of studying the effects on throat cases, are interesting. He says, "the pale greyish muddy infiltration of an ordinary tuberculous larynx is changed in one representing acute hyperæmia. The slowly developing ulcer endeavouring to force its way to the surface at many points in ordinary tuberculosis is replaced by the rapid appearance of one or almost two points of exit. More gratifying still these same ulcers, which under all known means of therapeutics or surgical procedure hitherto at command have healed so rarely that such results have been treated of as a purely fortuitous recurrence, or at best as a temporary palliation, have, under the influence of this magical fluid, been seen by me to develop and to heal within the period of a week. One other point of great interest and value, in that whereas in ordinary laryngeal tuberculosis the mucous membrane is so sensitive to examination as to be of diagnostic value, the effect of Koch's fluid is distinctly anæsthetic. In one patient you will see here swallowing of fluids even had been extremely painful for seventeen days prior to injection, and he had even been taught the method of drinking with his head lower than the body so as to relieve his distress, but on the day succeeding the first injection he asked for and ate without pain a plate of mutton. Previously he required cocaine before each meal. He now takes ordinary diet without any such preparation."—(*Provincial Medical Journal*, 1st January, 1891.)

Abscess of the Larynx not dependent on Perichondritis.—A case of this is reported by Dr. Richards of Philadelphia. The abscess was situated at the left side of the epiglottis, and formed a rounded, slightly lobulated swelling the size of half a cherry, and covered with reddened mucous membrane. At its most prominent part there was a small yellow spot.—(*American Journal of the Medical Sciences*, May, 1890.)

Classification of Intra-Nasal and Naso-Pharyngeal Diseases.—An excellent article on this subject has been issued by Mr. Lennox Browne. In his essay, the author points out the necessity for such classification, by references to the principle work on laryngology and rhinology. Considering the attention which is now being directed towards diseases of the nose, and particularly in their association with laryngeal affections, this first attempt at a classification will command a considerable amount of attention. The criticisms of this work have been mainly upon the difficulties of finding a basis for any classification, but, in the present state of our knowledge, nothing better has been placed before the profession. Mr. Browne's classification (a) nasal is—(1) morbid conditions of the mucous membrane, including acute rhinitis and chronic rhinitis; (2) morbid conditions of the osteo-cartilaginous framework and septum, including hamatoma, abscesses, perforations, narrowing, deviations and deformities, hypertrophies, or spurs, necrosis and caries, synostosis;

(3) new growths (whether of mucous membrane, bone, or cartilage), including non-malignant (polypi), malignant; (4) epistaxis; (5) neuroses, including, of olfactory nerve, of fifth nerve, of facial nerve; (6) foreign bodies, including physical: rhinoliths, &c.; biological: larvæ, &c.—(b) accessory cavities, including antrum frontal sinuses, ethmoidal sinuses, sphenoid sinuses; (c) naso-pharyngeal cavity, including post-nasal catarrh, bursitis, hypertrophy of pharyngeal tonsil, adenoids, new growths, fibromata, &c.

Of course each division is again sub-divided, in Mr. Browne's work, into the diseases following under each head.

Recent Literature.—"Klinischer Atlas der Laryngologie und Rhinologie nebst Anleitung zur Diagnose und Therapie der Nase und des Nasenrachenraumes herausgegeben," von Dr. Joh. Schnitzler unter mitwirkung von Dr. M. Hajeck und Dr. A. Schnitzler.

"Classification of Intra-Nasal and Naso-Pharyngeal Diseases," by Lennox Browne, F.R.C.S. Ed.

"The Effects of Dry Atmosphere in Chronic Inflammation of the Larynx and Nares," B. Fletcher Ingall, M.A., M.D. Chicago, 1890.

"De la Laryngite Tuberculeuse a forme Scléreuse et Végétante," par MM. le Dr. Gouguenheim et J. Glover. Paris, 1890.

PHYSIOLOGY.

By WILLIAM SNODGRASS, M.A., M.B.

Formation of Hæmoglobin Crystals.—S. Monckton Copeman (*Journal of Physiol.*, November 1890) mentions various methods of demonstrating the formation of crystals of hæmoglobin in human blood:—(1) The addition to the blood of decomposing serum or pericardial fluid; (2) treatment with bile; (3) agitation with ether; (4) semi-digestion in the stomach of the common leech. Of these methods the first is the only one which is invariably successful. From experiments now in progress, it would seem that a special micro-organism, which he has isolated, is the main factor in bringing about the change. The crystals obtained are those of reduced hæmoglobin.

Proteids in Milk.—Dr. Halliburton (*Journal of Physiol.*, November 1890), having re-investigated this question, arrives at the conclusion that there are only two proteids in milk—viz., caseinogen and lact-albumin. The caseinogen may be precipitated by the action of certain neutral salts, or of acetic acid, and the term casein should be restricted to the curd formed from caseinogen by the action of rennet. In the classification of proteids, casein should be grouped with other insoluble proteids, like fibrin and gluten, formed by ferment activity from pre-existing more soluble proteids. Lact-albumin is very similar to serum-albumin, but differs from it in its specific rotatory power; in its behaviour on heat coagulation, and in precipitability by certain neutral salts.

Clotting of Milk and Blood.—MM. Maurice Arthus and Calixte Pages (*Archiv. de Physiol.*, October, 1890) maintain that clotting alike in blood and milk is due to the chemical transformation under the influence of a ferment, of an albuminoid substance which is transformed to an insoluble calcic compound—fibrin or casein.

Biliary Secretion.—M. A. Dastre (*Archiv. de Physiol.*, October, 1890) states that the study of biliary secretion in an animal, as nearly as possible in the normal condition, shows the following facts:—(1) The biliary secretion is fairly regular; (2) there are two periods daily of maximal secretion—viz., 9 A.M. and 9 to 11 P.M.; (3) the influence of food, that is to say of the ingestion

of food, and of the ensuing digestion, seems to be at first indifferent, but appears to make itself felt 10 to 14 hours later, the increase in biliary secretion corresponding to the elaboration by the liver of the absorbed products of digestion.

Injection into the Peritoneal Cavity.—M. Dastre (*Archiv. de Physiol.*, October, 1890) has compared the effect of injecting solutions of lactose in suitable degrees of concentration into the peritoneal cavity and into the veins. He finds that the general results are almost entirely the same. In extending this line of investigation, care would have to be taken that the fluids used were not affected by the serous surface in absorption.

Books, Pamphlets, &c., Received.

Principles of Surgery, by N. Senn, M.D., Ph.D., with 109 Wood Engravings. Philadelphia and London : F. A. Davis. 1890.

Twelve Lectures on the Structure of the Central Nervous System, by Dr. Ludwig Edinger, translated by W. H. Viltum, M.D., and edited by C. Eugene Riggs, A.M., M.D. Philadelphia and London : F. A. Davis. 1890.

Heredity, Health, and Personal Beauty, by John V. Shoemaker. Philadelphia and London : F. A. Davis. 1890.

Electricity in the Diseases of Women, by G. Bethun Massey, M.D. Second edition. Philadelphia and London : F. A. Davis. 1890.

Diabetes: its Causes, Symptoms, and Treatment, by Chas. W. Purdy, M.D. Philadelphia and London : F. A. Davis. 1890.

The Medical Bulletin Visiting List. Philadelphia and London : F. A. Davis. 1890.

The Transactions of the Edinburgh Obstetrical Society. Vol. XV. Session 1889-90. Edinburgh : Oliver & Boyd. 1890.

Lehrbuch der Auscultation und Percussion, von Dr. C. Gerhardt, fünfte Auflage, mit 49 Holzschnitten. Tübingen : H. Laupp. 1890.

Evidences of the Communicability of Consumption, by G. A. Heron, M.D. (Glas.) London : Longmans, Green & Co. 1890.

Foods and Dietaries, by R. W. Burnet, M.D. London : Chas. Griffin & Co. 1890.

On Severe Vomiting During Pregnancy, by Graily Hewitt, M.D. London : Longmans, Green & Co. 1890.

A Treatise on Diseases of the Sheep, by John Henry Steel, F.R.C.V.S. London : Longmans, Green & Co. 1890.

Aids to Sanitary Science, by Francis J. Allan, M.D. London : Baillière, Tindall & Cox. 1890.

Researches in Micro-Organisms, by A. B. Griffiths, Ph.D. London : Baillière, Tindall & Cox. 1891.

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ORIGINAL ARTICLES.

SYPHILIS AND MARRIAGE, WITH SPECIAL REFERENCE TO THE EFFECT PRODUCED ON PROCREATION.*

By W. LOUDON STRAIN, M.B.

THAT syphilitic infection in one or other or both parents is commonly followed by serious results as regards the procreative power, has long been well known to the profession, and a sterile marriage, or a sequence of abortions, has frequently been traced to a syphilitic cause. Beyond the general admission of this fact, I am not aware that the subject has received any very great attention in this country. Fournier has been a careful observer of the phenomena presented, and is still pursuing his enquiries into the history of married people, who are also syphilitic subjects.

During a residence of six years in Brazil I had almost unequalled opportunities of studying this disease, owing to its fearful prevalence amongst all classes in that country, and for the last year of my work there, my enquiries were chiefly directed to the question of the effect of syphilitic infection on procreation.

* The groundwork of this paper was embodied in a thesis presented to the Academy of Medicine of Rio de Janeiro, in April, 1890, for its licence to practice in Brazil.

In most of the cases brought under my notice the element of the effect of treatment may be discarded, because, owing to peculiarities of medical practice in that country, no effectual treatment had been adopted.

In order to make the subject as clear as possible, let me first refer to the various modes by which a *woman* may acquire syphilis:—

1. She may acquire a primary hard chancre, and pass through all the well known phenomena of constitutional syphilis.

2. The husband may have acquired syphilis prior to marriage, but at the date of marriage he has no existing lesion capable of infecting the woman with a primary chancre. But should she become pregnant, syphilitic manifestations will usually develop in her about the third or fourth month of gestation, and these manifestations will usually take the form of condylomata on the genitals. In this mode of infection I have frequently found that no other syphilitic manifestation appears in the woman; and, in cases where they do appear, they are usually of a very mild kind. I think I am correct in saying I have never seen severe secondary or later manifestations where this was indubitably the mode of infection.

3. The woman may have inherited syphilis from her own parents.

As regards the *man* there can be but two modes of infection, (1) by direct inoculation, or (2) by inheritance. It is of importance however, for the purpose of this investigation to note whether the date of his infection was more or less remote from the date of marriage.

Having thus set forth the different modes of syphilitic infection, I desire to show, by the relating of cases, that the effect on procreation is not the same in the different modes of infection, but that, on the contrary, the result on the procreative power is widely different, at least in the first two modes of infection of the woman.

The cases are not in any way selected, and were all seen by me during the year 1889 and the results carefully noted. I may say that for the last three months of the year I had the assistance, in noting and recording cases, of my old fellow-student and fellow-resident in the Western Infirmary, Dr. Andrew Stewart.

(1) In the first place, I will narrate a number of cases in which there was no doubt that the woman had suffered from chancre, contracted from her husband or paramour.

(2) I will narrate some cases where the woman had suffered

from chancre, but where there was certain knowledge, or a strong presumption, that the husband or paramour was not syphilitic.

(3) Cases where the husband had contracted syphilis at a period more or less remote from the date of marriage, where the woman becomes pregnant, develops syphilitic manifestations during pregnancy, but never suffered from chancre.

(4) Cases where the husband contracted syphilis, usually at some period of years prior to marriage, where pregnancy follows marriage, but the woman never has any syphilitic evidences.

(5) And, lastly, cases where syphilis was said to have been inherited by either the one or the other.

I cannot give all the cases in full detail, but the tables accompanying will give a *resumé* of all the cases. They are arranged according to the mode of infection, and the effects on procreation are set forth in a second column.

CLASS I.

CASES IN WHICH BOTH MAN AND WOMAN HAD CONTRACTED SYPHILIS BY CHANCRE.

Francisca R., æt. 17, a strong mulatto girl, was married on 2nd February, 1889. At the time of marriage her husband had some small fissured sores on his prepuce, and had previously had a hard chancre and severe constitutional symptoms. Between 20th and 25th March a sore appeared on the margin of the labium majus, which was seen and treated by me. In May she had skin eruption, sore throat, condylomata, &c., and up to the present time (February, 1890) no pregnancy has resulted.

Thereza M., æt. 26, married, Brazilian. Had two healthy children, but in the seventh month of her third pregnancy a hard chancre developed on her genitals, for which she consulted me. I had treated her husband two months previously for a similar affection. The child was born alive at full time, but in five days pemphigus developed, and the child died, aged 41 days. The mother, though more than three years has elapsed, has had no further pregnancy.

Donna Eulalia, æt. 22, married, fair-skinned Brazilian, husband a young farmer. Has been married 4 years, and one healthy child was born less than a year after marriage. Husband confesses having had a chancre and urethral discharge at the time of his wife's confinement. A few days

after confinement baby had purulent ophthalmia, and she had purulent vaginal discharge. About two months after confinement two sores developed on genitals. No further pregnancy has resulted.

Maria L., æt. 40, was seen by me on 23rd January, 1889. She has been twice married. By her first husband she had two healthy children, who are still living. After this she contracted syphilis from her husband, and she has never been pregnant since.

Lenora da C., æt. 25. This woman consulted me on 23rd February, 1889, on account of iritis. Three and a half years before, very shortly after her marriage, I saw and treated her for a primary chancre, and her husband also came under treatment for ulcerated throat. Both were kept on mercurial treatment for some time, but neglected treatment as soon as the specific manifestations disappeared. Shortly afterwards she became pregnant, and the child was born at full time. He has suffered severely from syphilis and presents a most pitiable aspect. A few months ago she gave birth to another child, which died a few hours after her delivery.

CLASS II.

CASES WHERE ONLY WOMAN HAD CHANCRE AND MAN NON-SYPHILITIC.

Donna Margarida M. This lady is the mother of a large family. In nursing her last child she developed a chancre on one of her nipples, and the baby had previously had a sore under its tongue, the nature of which was only suspected when condylomata appeared round the anus and a roseolar rash appeared on the body. After careful enquiry, I found the baby had been nursed by a black woman who was a frequenter of the house, and who I knew to be syphilitic, and her infant also. Secondary manifestations developed in the lady, but were not of a severe kind, she having been kept under careful mercurial treatment. Pregnancy followed, but she aborted at the third month in May, 1889. In January, 1890, she was again pregnant, but with what result I do not know. There was no suspicion of syphilis in the husband.

A woman contracted a chancre 8 months after the birth of her second child. Her husband then left her, but she became mistress to a man presumably non-syphilitic. She has never had any further pregnancy.

CLASS III.

CASES WHERE ONLY THE MAN HAD CHANCRE AND WOMAN INFECTED THROUGH FŒTUS.

Senor José C. A., æt. 33. Four years before marriage he contracted syphilis. He has been married six years, and his wife has been pregnant five times, with the following results:—

- | | | |
|----------------------|--------------------------------------|-----|
| 1st pregnancy— | aborted in the fourth month. | |
| 2nd ,, — | healthy child—no syphilitic disease. | |
| 3rd ,, — | do. | do. |
| 4th ,, — | early abortion. | |
| 5th ,, — | do. | |

She developed condylomata on her genitals during her second pregnancy, but never suffered from chancre.

Hercules C., æt. 33, consulted me on account of fits, of which he has had four in the last 18 months. He has been married 12 years, and about a year before marriage he contracted syphilis, but at the time of his marriage, and for some months before, he was considered well. During her first pregnancy his wife developed sores on her genitals, but since then she has had no further manifestations, and is now pregnant for the eighth time.

- | | | |
|----------------------|---|------------------|
| 1st pregnancy— | aborted. | |
| 2nd ,, — | child born dead. | |
| 3rd ,, — | child living; has suffered from syphilis. | |
| 4th ,, — | do. | do. |
| 5th ,, — | do. | do. |
| 6th ,, — | child living and healthy. | |
| 7th ,, — | do. | do. (14 months). |

The husband had one reappearance of condylomata after his wife's fourth pregnancy.

Samuel A. de M., æt. 26, consulted me on account of fits, of which he has had two. Has been married 7 years. Between one and two years before marriage he contracted syphilis, but at the time of marriage all symptoms had disappeared. His wife developed condylomata during her first pregnancy, but has had no further evidence of specific infection. She is at present pregnant for the fifth time.

- | | | |
|----------------------|--|--|
| 1st pregnancy— | child died at 2 months syphilitic. | |
| 2nd ,, — | child died of whooping-cough. | |
| 3rd ,, — | child has had syphilitic manifestations. | |
| 4th ,, — | child alive and well. | |

Donna Anna R., æt. 40. After the birth of her fifth child her husband contracted syphilis. Sometime afterwards she became pregnant, and during the course of pregnancy condylomata appeared, and at the same time sores in her mouth. Her first five children were all healthy, but after the syphilitic infection three pregnancies resulted in the birth of one child which died at two months, syphilitic, another which was born dead, and the last in early abortion. Two years after this she came under my care for malignant disease of the uterus, from which she died.

Porcena M. Married for 15 years. Has had ten pregnancies. The first two resulted in the birth of healthy children. Her husband, during a prolonged absence from home, contracted syphilis. About a month after his return she again became pregnant, and about the third month of gestation condylomata appeared on her genitals. She never suffered from chancre.

- 3rd pregnancy—child alive, but syphilitic.
- 4th " —aborted at fourth month.
- 5th " —child survived 20 days.
- 6th " —aborted at the third month.
- 7th " —aborted at fifth month.
- 8th " —born dead—full time.
- 9th " —early abortion.
- 10th " —aborted at fourth month.

Beyond condylomata she does not remember having had any other syphilitic manifestation.

João R. P. C., æt. 34. Married. His wife has been pregnant ten times. The first three children are alive and healthy. After this he contracted sores on the penis, but no constitutional symptoms followed. His wife again became pregnant.

- 4th pregnancy—miscarried in sixth month.
- 5th " —child died of measles at 3 years.

About time of birth of this child the husband contracted a single sore and constitutional symptoms followed. His wife subsequently became pregnant, and, during this pregnancy, had sores on her genitals.

- 6th pregnancy—aborted in fifth month.
- 7th " —do. do.
- 8th " —child born at seventh month, died in a few hours.
- 9th " —child born at term but died at end of two months. Had a skin eruption.
- 10th " —in sixth month of gestation.

The two following cases are interesting. In both cases the woman, in all probability, became infected through the foetus.

Maria T., æt. 25, was married at 15 years of age. Her husband had suffered from syphilis prior to marriage, and at that date had still evidences of the disease. She became pregnant one month after marriage, and about the fourth month of pregnancy had sores on her genitals, which persisted throughout the rest of the time. She has never had any further manifestation that she remembers.

1st, 2nd, 3rd, and 4th pregnancies—children all died shortly after birth.

Her husband then deserted her and she became mistress to another man, with whom she lived three years, but never became pregnant. He is said to have suffered from syphilis. She then became mistress to another man, who is said to be non-syphilitic; by this man she has had one child, now two years of age, which has suffered from hereditary manifestations.

Maria C., æt. 36, was married at 15 years of age. During her first pregnancy she had sores on her genitals, but she remembers nothing having the characters of a hard chancre. Her child lived a year and suffered severely from syphilis. Her husband died, and she became mistress to a man by whom she became pregnant six times, and in every case early abortion resulted. She is now with another paramour, by whom she has been pregnant twice, with a like result. He was with her in my consulting room, and confesses to having suffered from gonorrhœa but never from chancre.

CLASS IV.

CASES WHERE ONLY THE MAN HAD CHANCRE AND WOMAN HAD NO MANIFESTATIONS OF INFECTION.

Augusto C., married. Five years before marriage he contracted syphilis, but for some time before marriage he had been free of all manifestations of disease. His wife never suffered from any symptom of the disease, and has given birth to five healthy children.

In another case, the husband had contracted syphilis about a year before marriage. The wife does not remember suffering from any affection that could be attributed to syphilitic infection.

1st pregnancy—child born at full time but died shortly after.

2nd „ —abortion.

3rd, 4th, and 5th pregnancies—children are alive and well.

Antonia P. This woman's husband contracted syphilis four years before marriage. But she herself has never had any symptoms of the disease.

1st and 2nd pregnancies—children alive and well.

3rd pregnancy—child born dead.

4th " —abortion.

5th " —suffers from "snuffles" and psoriasis.

CLASS V.

CASES WITH A REASONABLE SUSPICION OF HEREDITARY SYPHILIS.

A few cases have come under my observation where there was pretty strong evidence that the syphilitic taint was present by inheritance. The question whether the impairment of reproductive power is present when the father or mother has inherited syphilis has been but little investigated, and unless in the case of an old family practitioner who knows the family history and can speak with assurance, an element of uncertainty must always surround these cases. I have seen a few cases in which the evidence was at least very strong, of one or other having suffered from inherited syphilis.

The first case is that of a married woman who came along with her mother to consult me. The mother was the patient suffering from ulcers on her legs, and there was a history of syphilitic infection many years ago. The married daughter was said by the mother to have suffered from syphilitic manifestations in her infancy and childhood. She married, and her husband never had syphilis. She has been pregnant eight times.

1st pregnancy—child died on second day after birth.

2nd " —child died on fourth day after birth.

3rd, 4th and 5th pregnancies resulted in abortions.

6th pregnancy—child alive, suffers from psoriasis.

7th and 8th pregnancies—children are living and present no evidence of disease up till now.

José G. B., æt. 52. Consulted me and gave the following history. After the birth of his third child he contracted syphilis, and in the subsequent pregnancy his wife had sores on her genitals. The child—a boy—was born at full term, but when a month old, sores appeared round the anus and over his body. These in time disappeared, and he is now a married man. His wife has been pregnant four times.

1st pregnancy—aborted.

2nd " —still born.

3rd and 4th pregnancies—children are alive and well.

The cases which I have narrated in these five classes show in a striking manner the points which I wish to elucidate, viz., that the effect on procreation varies according to the mode of infection of the parent.

The result on procreation in Classes I and II is very similar. So that it would appear that, where both the man and the woman, and also where only the woman, have suffered from primary chancre, the result, as far as procreation is concerned, is very disastrous. Frequently it seems to destroy entirely the conceptive power, or, if conception does take place, abortion, or, at best, a child which suffers severely from syphilis is the result.

Very different are the results in the cases under Classes III and IV. In these, the power of conception seems to be very little affected, but the result on the product of conception is still very serious. Abortions and miscarriages are appallingly frequent, as well as children born dead, or who die within a short period of birth. A very considerable proportion of children are born at or near full term, alive, develop syphilitic manifestations, from which they may recover, and grow up to be men and women. In not a few cases, especially where the syphilitic infection of the father took place four or more years before marriage, and where the mother has entirely escaped the disease, or had only the minimum of its manifestations, children may be born who never at any time show evidences of the disease. The same cannot be said of the woman. If she has been infected through chancre, or through the foetus, the effect seems to be of a more permanent or lasting kind. These points are of importance in considering whether consent to marry can be given to a syphilitic subject, and, if so, when.

From my limited experience of cases coming under Class V, I am strongly inclined to believe that the remarkable tendency to destroy, or weaken, the reproductive power manifested by the syphilitic poison, extends to the next generation; in other words, that, in persons who have inherited syphilis, but have survived and married, the reproductive power is abnormally affected, as shown by barrenness, frequent abortions, or the presence in the children of such skin diseases as psoriasis. But I fully recognise that the subject requires much more extensive investigation than I have as yet had the opportunity to give.

CLASS I.

Cases in which both Man and Woman had contracted Syphilis by Chancre.	Result as to Procreation.
1. After the birth of the second child, husband infected wife with chancre.	After the infection, never again became pregnant.
2. Husband and wife both suffered from chancre and constitutional symptoms.	No pregnancy has resulted.
3. Husband infected wife shortly after marriage. Both had severe constitutional symptoms.	First child has suffered fearfully from syphilis. Second born dead, and has had no further pregnancy.
4. Husband infected wife with chancre towards end of third pregnancy.	Two healthy children before infection. Third died of pempigus, and no further pregnancy.
5. Husband infected wife before first pregnancy.	Only one child, and this suffered from hereditary disease.
6. Husband infected wife after marriage.	One child born dead, and no further pregnancy.
7. Husband infected wife shortly after marriage.	No pregnancy has resulted.
8. Husband infected wife before first pregnancy.	First child syphilitic, but survived. Two died at birth, and there has been no further pregnancy.
9. Husband infected wife after birth of healthy child.	Never again became pregnant.
10. Husband infected wife during fifth pregnancy.	First four healthy, fifth aborted, and never again became pregnant.

CLASS II.

Cases where only the Woman was the subject of Syphilitic Infection.	Result as to Procreation.
<p>(a) <i>Infection by Chancre.</i></p> <p>1. Woman had hard chancre on breast, and constitutional symptoms.</p> <p>2. Woman contracted chancre eight months after birth of second child.</p>	<p>Previously numerous healthy children. Next pregnancy aborted. Is again pregnant.</p> <p>After death of husband, she lived with a man who was non-syphilitic, but she never again became pregnant.</p>
<p>(b) <i>Infection through Fetus.</i></p> <p>1. Woman infected during first pregnancy.</p>	<p>By her husband had one syphilitic child, which died. By one paramour she had six abortions; and by her present one she has had two more.</p>
<p>2. Woman infected during first pregnancy.</p>	<p>Four children by her husband all died in infancy. She then lived with a man for three years, but did not become pregnant. He is said to have been syphilitic. She then had a child by another man, which has suffered from syphilitic manifestations. The father says he never had syphilis.</p>

CLASS III.

Cases where only the Man had Chancre and Woman infected through Fetus.	Result as to Procreation.
1. <i>Husband</i> —Contracted syphilis shortly before marriage. <i>Wife</i> —Had slight sores on genitals during first pregnancy.	First and second children died at birth; third has survived, but suffers from syphilis; fourth died at birth.
2. <i>Husband</i> —Chancre 4 years before marriage. <i>Wife</i> —Condylomata during first pregnancy.	First, fourth, and fifth pregnancies aborted; second and third children are healthy.
3. <i>Husband</i> —Chancre 1½ years before marriage. <i>Wife</i> —Condylomata at end of third month of pregnancy.	Has had three dead children.
4. <i>Husband</i> —Chancre 2 years before marriage. <i>Wife</i> —Condylomata from third month of pregnancy.	Aborted in fifth month. (Recent case).
5. <i>Husband</i> —Chancre shortly before marriage. <i>Wife</i> —Condylomata from third month of pregnancy.	First and second pregnancies, child born dead at seventh month; third pregnancy, child is alive and well (1½ years).
6. <i>Husband</i> —Chancre after birth of his fifth child. <i>Wife</i> —Pregnancy followed, and towards close of pregnancy syphilitic manifestations developed.	Five healthy children before infection; sixth died syphilitic; seventh born dead; eighth aborted; and the woman died of malignant disease of the uterus.
7. <i>Husband</i> —Had contracted syphilis before marriage—how long, not known. <i>Wife</i> —Has suffered loss of hair, nocturnal pains, and latterly choroiditis.	First pregnancy resulted in early abortion; second and third children survived, but syphilitic; fourth and fifth (latter by another father) non-syphilitic.
8. <i>Husband</i> —Contracted chancre after birth of second child. <i>Wife</i> —Developed condylomata during third pregnancy, but has had no other syphilitic evidences.	First two children healthy; third syphilitic, but survived, fourth aborted; fifth died syphilitic; sixth aborted; seventh and eighth born dead; ninth and tenth aborted.
9. <i>Husband</i> —Chancre after birth of second child. <i>Wife</i> —Condylomata during third pregnancy.	First and second children healthy; third, fourth, and fifth have suffered from hereditary syphilis; the sixth (age 3 months) up to present time remains well.
10. <i>Husband</i> —Chancre about a year before marriage. <i>Wife</i> —Condylomata during first pregnancy.	First pregnancy aborted; second child born dead; third, fourth, and fifth children have suffered from syphilis; sixth and seventh children healthy; eighth <i>in utero</i> .

CLASS IV.

Cases where Man only had Chancre and Woman never showed Syphilitic manifestations.	Result as to Procreation.
<p>1. <i>Husband</i>—Chancre five years before marriage. <i>Wife</i>—Never had any syphilitic manifestation.</p>	<p>Five healthy children. No abortions.</p>
<p>2. <i>Husband</i>—Chancre some time before marriage, but length of time not known. <i>Wife</i>—No evidences of syphilis.</p>	<p>First, second, and fourth pregnancies—children born dead ; third pregnancy—child died, aged one month ; fifth pregnancy—child died, aged two months.</p>
<p>3. <i>Husband</i>—Chancre about a year before marriage. <i>Wife</i>—No evidences of syphilis.</p>	<p>First child died at birth ; second aborted ; third, fourth, and fifth are alive and well.</p>
<p>4. <i>Husband</i>—Chancre about a year before marriage. <i>Wife</i>—No evidences of syphilis.</p>	<p>First child born dead prematurely ; second died at birth.</p>
<p>5. <i>Husband</i>—Chancre four years before marriage. <i>Wife</i>—No evidences of syphilis.</p>	<p>First and second children alive and well ; third born dead ; fourth aborted ; fifth has snuffles and a skin eruption.</p>
<p>6. <i>Husband</i>—Chancre three years before marriage. <i>Wife</i>—No evidences of syphilis.</p>	<p>First and second pregnancies—aborted. Is now pregnant for third time.</p>

CLASS V.

Cases where a reasonable suspicion of Hereditary Syphilis in one or other parent.	Effect as to Procreation.
<p>1. <i>Husband</i>—No history of syphilis. <i>Wife</i>—Said by her mother to have had condylomata round anus in infancy. History of syphilis in father and mother.</p>	<p>Eight times pregnant—first and second children died a few days after birth ; third, fourth, and fifth aborted ; sixth suffers from psoriasis ; seventh and eighth are healthy.</p>
<p>2. <i>Husband</i>—No history of syphilis. <i>Wife</i>—Her father had syphilis before she was born, and she is the only child surviving out of seven. The others died in infancy, or were born prematurely.</p>	<p>One child has been born, which has remained healthy ; now aged 14 years. No further pregnancy has resulted.</p>
<p>3. <i>Wife</i>—Supposed to have inherited syphilis. <i>First Husband</i>—Non-syphilitic. <i>Second Husband</i>—Contracted syphilis 20 years before his marriage.</p>	<p>By first husband, eight pregnancies—only two survived, others died in infancy. By second husband, seven pregnancies—two children died within a month, and five abortions.</p>
<p>4. <i>Husband</i>—Inherited syphilis. <i>Wife</i>—No syphilitic manifestations.</p>	<p>Four pregnancies—first aborted ; second born dead ; third and fourth children alive and well.</p>

A SPECIMEN OF THE PRISMATIC VARIETY OF THE
TÆNIA SAGINATA (MEDIOCANELLATA).

By JOSEPH COATS. M.D.

(Read before the Medico-Chirurgical Society, on 5th December, 1890.)

THE specimen shown was sent to me by Dr. Temple of Comrie, and is part of a tapeworm which, it will be acknowledged, has a very peculiar form. It is a rather bulky worm; but, instead of being formed of a tape-like band as the ordinary tapeworm, we have here a form which is perhaps best described by the term *prismatic*. Instead of a single band, we have three nearly equal radiating pieces united together into a continuous three-limbed body. At the lower extremity the three limbs separate, and the worm ends in a short triple fork, from which the individual segments have probably dropped off during the life of the worm. A transverse section shows the three radiating members, as in the accompanying sketch.

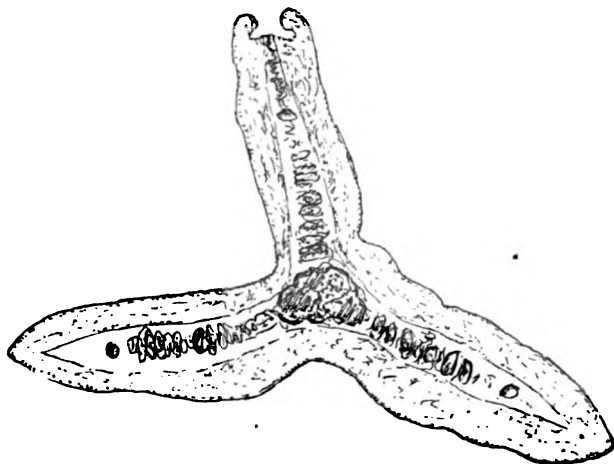


FIG. 1.—TRANSVERSE SECTION OF PRISMATIC TAPEWORM.

The central stem of uterus and some of the lateral branches are shown. Also some seminal vesicles, and the genital orifice at the extremity of one limb. The water-vascular system is represented by a round aperture near the apex of each limb.

Examining the worm as a whole it can be seen that the *genital openings* are all seated on the same band, forming a series of pores side by side. This fact suggested to my mind that the band bearing the genital pores might really be a projection from the middle of the proper body, consisting of

the sexual apparatus. This is the condition of matters in the *Bothriocephalus latus*, where the sexual apparatus forms a prominent rosette projecting from the flat body of the worm. At first, therefore, I was inclined to regard the specimen as one of *Bothriocephalus latus*. But examination showed, what is brought out in the transverse sections and shown in the accompanying sketch, that the sexual apparatus is present in all the three limbs; and so the *Bothriocephalus latus* was excluded.

The tapeworms which occur in man belong, so far as this country is concerned, almost altogether to the two species, *Tænia solium* and *Tænia saginata* (or *mediocanellata*).* In these the male and female sexual organs are both contained in the same segments or proglottides of the adult worm. That

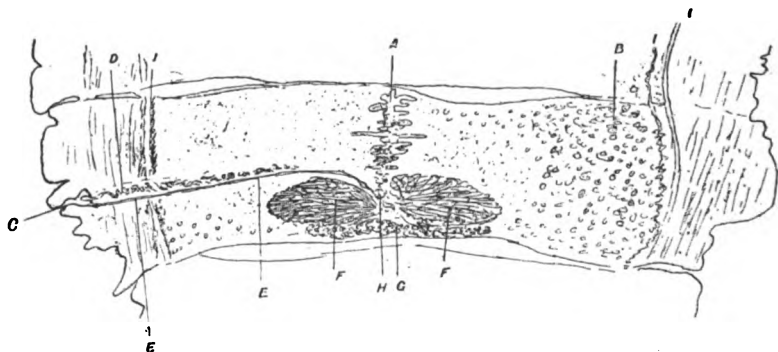


FIG. 2.—LONGITUDINAL SECTION OF A PROGLOTTIS OF *TÆNIA SAGINATA*.

A. Uterus, throwing out lateral branches. B. Seminal vesicles. C. Sexual opening. D. Vas deferens. E. Vagina. F, F. Ovaries. G. Yolk-gland. H. Mehli's body. I. Water-vascular system.

is to say, each segment or proglottis contains both structures, and is therefore hermaphrodite. I have placed under the microscope some longitudinal sections of a *Tænia saginata* in which the elements of the sexual apparatus are well displayed. This tapeworm, as will appear afterwards, had very short segments, and the various members of the female apparatus are somewhat compressed from before backwards. The accompanying sketch is a camera lucida drawing from one of these specimens, and the parts may be followed in it. The uterus, A, has a central stem, and it shows many lateral branches

* Leuckart objects, with some reason, to the use of the designation *Tænia medicanellata*, for the double reason that the *T. solium* has a central uterine stem as well as the other, and that the name was really applied at first to both species, and most frequently to the *T. solium*. He prefers, therefore, the name *T. saginata*.

beginning to be formed; but, as the stage reached in the part chosen is an early one, the lateral branches have scarcely developed. The seminal vesicles or testicles are isolated bodies shown at *B*, scattered more or less throughout the parenchyma. The sexual opening is to the left at *C*. At this opening the convoluted vas deferens, *D*, ends in a protruding penis, and the vagina, *E*, begins, afterwards passing inwards as a straight tube. The vagina passing towards the middle line undergoes, just before its termination, a slight dilatation, which is termed the receptaculum seminis. It then ends in a round body (*H*) just behind the termination of the uterus, which is variously named the globular body, Mehlis's body, and the shell-gland. It is, apparently, the cavity in which the ova encounter the spermatozoa. On either side of this posterior part of the segment lie the ovaries in the form of fan-shaped glandular expansions (*F, F*). Behind these again is the yolk-gland, *G*, which consists rather of closely aggregated glandular acini. In addition to the sexual organs, the sketch shows the water-vascular system, *I*, which runs down each side, and forms a junction with the transverse portion at the posterior extremity of each segment (at *I*, to the left—this transverse part belonging to the preceding segment). The longitudinal stem is not infrequently double, as on the right side in our sketch.

The other sketch is a transverse section of the same part of the worm, and the letters have the same significance.

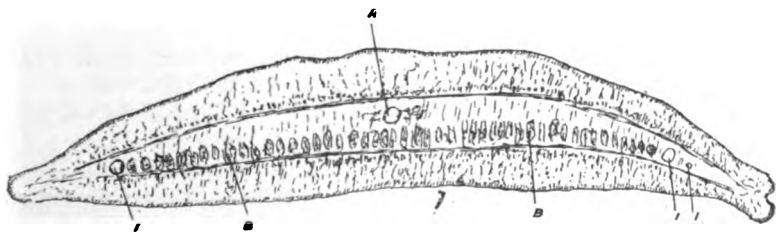


FIG. 3.—TRANSVERSE SECTION OF SAME WORM.

A. Uterus. B, B. Seminal vesicles. I, I, I. Water-vascular tubes; two on right side.

Recurring to our present case, Figure 1 (which is considerably less magnified than the other) shows a central uterine stem containing ova, also uterine ramifications in each of the limbs. There are also testicles scattered through all the limbs, although the genital opening is only in one. The water-vascular system is also shown in section in all the three limbs.

In regard to diagnosis, we have, as already remarked, excluded the *bothriocephalus*, and raised a strong presumption

that it is either *T. solium* or *T. saginata*, from the fact that the uterus forms a central stem with branches passing outwards into each of the members. In order to discriminate between these two, the form of the head is the most satisfactory distinction. This means is, however, excluded, as we have only a small part of the worm. Another means is the form of the uterus. In the *T. solium* the central stem sends out only a few lateral branches, generally about eight on either side, and these divide somewhat frequently into many ramifications. In the *T. saginata*, on the other hand, the uterus has many lateral branches, generally twenty to thirty, and these do not ramify much, only branching dichotomously as a rule. I made longitudinal sections of the three bands where they had separated at the lower end of the worm, in order to determine this point, and found that the lateral branches were many, amounting to at least twenty, so that we may regard this as an example of the *T. saginata*. As already noted, the proglottides are very short, as compared with those of the ordinary tape-worm, and the uterine branches were correspondingly close together. Like those of the *T. saginata* also, they only branched dichotomously.

We may conclude that this is an example of the prismatic malformation of the *T. saginata*. According to Leuckart, malformations are somewhat frequent in the *T. saginata*, and this form is not very uncommon. It may, I think, be a question whether a condition like this is properly designated by the term malformation. There is here a particular modification of the type propagated from one end to the other of this whole worm. The worm also is to be regarded as a colony of individuals, each of which has its separate sexual apparatus. The modification is simply a variation from the ordinary type, which is in no way inconsistent with the life and integrity of the individual or species. Were this type the common one, then the ordinary form would be the modification. It would therefore, probably, be more correct to regard this as a variety of the *T. saginata*.

Variations seem not uncommon in this form of tape-worm. The case from which our sketches (Figs. 2 and 3) were taken also presents a distinct variation from the ordinary type, chiefly as regards the length of the segments. The segments are very short, in this respect corresponding with the form already considered. In the upper part of the worm, which is the part from which our sketches were taken, the segments are a quarter of an inch in breadth, and, although the sexual organs are already somewhat developed, the entire length is

only about a sixteenth of an inch. Further down, the segments measure three-eighths by one-eighth of an inch, and at the lower extremity their length is slightly less. These terminal segments have a peculiar shape, somewhat resembling that of the finger nail. In all these short segments, we have the uterus with about twenty lateral branches, so that the worm is an example of the *T. saginata*.

SCHEME FOR A PATHOLOGICAL INDEX.

By JAMES C. HOWDEN, M.D., MONTROSE.

THE pathological records of our hospitals and asylums contain a vast accumulation of valuable facts of which little use has been made, doubtless owing to the labour which would be entailed in wading through much irrelevant matter, in order to elicit information upon any special lesion which might be the subject of investigation.

Thirty years ago, with a view to overcome this difficulty, I drew out, for my own use, an index of lesions for the pathological record of the Montrose Asylum, which has been carefully kept ever since. When the report of an autopsy is drawn out, the various lesions are indexed under their respective headings, so that, at any future time, the cases in which they were found, could be referred to at once. On various occasions, I have been applied to for statistical information as to certain pathological conditions—*e.g.*, the frequency of gall-stones or cancer. Instead of having to search through volumes of pathological reports, my assistant was able, with the aid of the index, in half-an-hour, to give me a tabular statement of the cases in which the lesions occurred for the last thirty years.

In 1871, I published a short paper in the *Journal of Mental Science* (vol. xvii, p. 83), in which I endeavoured to explain the value and use of the index, giving, in illustration, an analysis of the *post-mortem* appearances in 235 insane persons. The analysis possibly diverted attention from the index scheme, which I was anxious to press on the attention of asylum medical officers, but which, so far as I am aware, has not been adopted in other asylums as yet.

The scheme given below is substantially similar to the index I have used. It has been revised by Professor W. T. Gairdner and Dr. Joseph Coats, Pathologist to the Glasgow Western Infirmary, and will, I venture to hope, be found useful in general hospitals as well as in asylums.

HEAD AND SPINE.	PAGE IN PATHOLOGICAL RECORD.	
	Male.	Female.
	Vol. Page.	Vol. Page.
<p>SCALP,</p> <p>CALVARIUM—</p> <p>Abnormally thick, Abnormally thin, Irregular thickness of, Formation of new layering inside inner table, Asymmetry, Brittle, Fractures of the vault, Fractures of the base, Roughening of the outer table, Projecting spicules of bone from, Caries, Caries with perforations, Spongy, Eburnated, Abnormal injection of the diplœe,</p> <p>MEMBRANES—</p> <p>a. <i>Dura mater</i>—</p> <p>Rusty appearance on inner surface of, Sinuses, rupture of, ,, thrombosis in, Pacchionian bodies, Extravasation of blood between calvarium and, Firmly adherent to calvarium, Abnormally thickened, Ossification of, Tumours involving, Congestion of, Rusty staining of,</p> <p>b. <i>Arachnoid</i>—</p> <p>Effusion of blood into sac of, Sanguineous cysts in, Excess of cerebro-spinal fluid in, Semi-gelatinous fluid in sac of, Pus in sac of, False membrane in sac of, Crystalline granulations on, Opacity and thickening of, Adhesion of surfaces of, Tumours involving,</p> <p>c. <i>Pia mater</i>—</p> <p>Marked injection of vessels of, Edema of, Pus in, Gelatinous fluid in, Local bullæ of fluid, Sanguineous effusion in,</p>		

HEAD AND SPINE (<i>continued</i>).	PAGE IN PATHOLOGICAL RECORD.	
	Male.	Female.
	Vol. Page.	Vol. Page.
MEMBRANES (<i>continued</i>)— Tumours involving, Brown gelatinous deposit in, Thickening of, Adhesion to the grey matter of, Tuberculosis of,		
BLOOD-VESSELS— Aneurismal dilatation of, Miliary aneurisms, Embolism in, Thrombosis in, Injection of, Atheroma of, Opacity on the line of, Venous congestion, Punctæ,		
GREY SUBSTANCE— Bullæ on the surface of, Abnormalities in the thickness of, Abnormalities in the colour of, Anæmia of, Injection of, White softening of, Red softening of, Atrophy of, Edematous condition of, Superficial cyst in, Flattening of the convolutions, Effusion of blood into, Increased vascularity of, Tumours in, Granulations on surface of,		
WHITE SUBSTANCE— Induration of, Edema of, White softening of, Brown softening of, Effusion of blood into, Effusion of pus into, Excessive shrinking of, Marked injection of the vessels of, Cysts in, Atrophy of, Tumours in, Pink mottlings, Irregular vascularity of,		

HEAD AND SPINE (<i>continued</i>).	PAGE IN PATHOLOGICAL RECORD.	
	Male.	Female.
	Vol. Page.	Vol. Page.
OPTIC THALAMUS AND CORPUS STRIATUM— Hæmorrhage in, Punctiform hæmorrhages in, Pink gelatinous softening of, White softening of, Tumours in, Cysts in, Patches of sclerosis, Local atrophies, Cicatrices in, Atrophy of the optic nerves and tracts, Grey sclerosis of the optic nerves and tracts,		
VENTRICLES— Excessive serous fluid in, Granulations on, and thickening of ependyma, Sanguineous effusion into, Purulent effusion into, Tumours involving, Dilatation of,		
SEPTUM LUCIDUM— Leathery conditions of, Tubercle in, Bullæ in,		
CHOROID PLEXUS— Cysts in, Tumours in, Earthy deposit in, Congestion of, Edema of,		
CORPUS CALLOSUM — Softening of,		
POSS— Atrophy { (a) General, (b) Unilateral, Hæmorrhages into, Softening of, Congestion of, Softening of floor of fourth ventricle,		
CEREBELLUM— Adhesion of membranes to, Effusion of blood into pia mater of, Tumours in, Pus in, Edema of,		

NECK—THORAX.	PAGE IN PATHOLOGICAL RECORD.			
	Male.		Female.	
	Vol.	Page.	Vol.	Page.
<p>CEREBELLUM (<i>continued</i>)— Softening of, Atrophy of { (a) General, (b) Unilateral, Corpora dentata, </p> <p>SPINAL CORD— <i>Membranes</i>— Congestion of, Pus in, Tuberculosis of, Calcareous scales on, Excess of cerebro-spinal fluid, Softening of, Sclerosis of, False membrane of,</p> <p>GENERAL CONSIDERATIONS— Marked difference in the weight and size of the two cerebral or cerebellar hemispheres, Abnormally firm consistence of the brain, Simplicity or complexity of the convolutions, Narrow and atrophied convolutions, Shallow sulci, Softening of crus, Apparently normal brains, Softening of the right hemisphere, Softening of the left hemisphere, Abnormalities of nerves,</p>				
NECK.				
<p>Affections of thyroid gland, Affections of larynx, Affections of trachea, Affections of pharynx, Affections of blood-vessels, Affections of lymphatics,</p>				
THORAX.				
<p>RIBS— Malformations of, Fracture of, Callus on, Excessive softening of, Effusion of blood external to, Effusion of pus, external to, Ossification of the cartilages of,</p>				

THORAX (<i>continued</i>).	PAGE IN PATHOLOGICAL RECORD.			
	Ma'e.		Female.	
	Vol.	Page.	Vol.	Page.
PLEURA— Effusion of serous fluid into, Effusion of sanguineous fluid into, Purulent matter in, Congestion of, Perforation of, Thickening of, Calcareous plates on, Fibrinous deposit in, Blood in, Adhesions of— Right side { Universal, { Partial, Left side { Universal, { Partial, Tuberculosis of, Tumours involving,				
LUNGS— Tubercular or cheesy condition in { (a) Right, { (b) Left, Cavities in { (a) Right, { (b) Left, Cancer in { (a) Right, { (b) Left, Congestion of { (a) Right, { (b) Left, Œdema of { (a) Right, { (b) Left, Red hepatisation of { (a) Right, { (b) Left, Grey hepatisation of { (a) Right, { (b) Left, Lobular hepatisation of { (a) Right, { (b) Left, Gangrene of, Abscess of (non-tubercular), Emphysematous dilatation of { (a) Right, { (b) Left, air-cells, Perforation of substance from pleural surface, Brown induration of, Pulmonary embolus, Carbonaceous deposit in, Calcareous deposit in, Old cicatrices in, Collapse of right, Collapse of left, Infarction of right, Infarction of left, Fibroid degeneration (non-tubercular),				

THORAX (<i>continued</i>).	PAGE IN PATHOLOGICAL RECORD.			
	Male.		Female.	
	Vol.	Page.	Vol.	Page.
BRONCHI— Injection of, Pus in, Blood in, Dilatation of, Bronchial glands enlarged, Bronchial glands calcified, PERICARDIUM— Adhesion of the surface of, Marked opacity of, Thickening of, Serous fluid in the sac of, Fibrinous deposit on, White patches on, Tuberculosis of, Effusion of blood into, HEART— Substance pale and flabby, Hypertrophy of, Small, Dilatation of right auricle, ,, left auricle, ,, right ventricle, ,, left ventricle, Surrounded by fat, Fatty infiltration of, Fatty degeneration of, Cysts in the substance of, Tumour in the substance of, Fibrinous transformation of muscle, MITRAL VALVE— Malformations, Cauliflower excrescence on, Thickening of, Incompetency of, Stenosis of, Pouch-like dilatation of, Atheroma of, Fenestræ in, Adhesion of curtains, TRICUSPID VALVE— Malformations, Thickening of, Cauliflower excrescence on, Incompetency of,				

THORAX (<i>continued</i>).	PAGE IN PATHOLOGICAL RECORD.			
	Male.		Female.	
	Vol.	Page.	Vol.	Page.
TRICUSPID VALVE (<i>continued</i>)—				
Stenosis of,				
Pouch-like dilatation of,				
Atheroma of,				
Fenestræ in,				
Adhesion of curtains,				
AORTIC VALVE—				
Malformations,				
Thickened,				
Fenestrated,				
Cauliflower excrescence on,				
Incompetency of,				
Stenosis of,				
Adhesion of curtains,				
Atheroma of,				
Calcareous deposit on,				
Enlargement of the corpus arantii,				
Fibrous nodules on,				
PULMONARY VALVE—				
Malformations,				
Thickening of,				
Fenestration of,				
Cauliflower excrescence on,				
Incompetency of,				
Stenosis of,				
Adhesion of curtains,				
Atheroma of,				
Calcareous deposit on,				
Enlargement of the corpus arantii,				
Fibrous nodules on,				
AORTA—				
Atheroma of,				
Ulceration of,				
Dilatation of,				
Perforation of,				
Aneurism of,				
Blood-stained,				
CORONARY ARTERIES—				
Atheroma of,				
Fatty deposit on,				
Thrombosis of,				
Embolus in,				

ABDOMEN.	PAGE IN PATHOLOGICAL RECORD.			
	Male.		Female.	
	Vol.	Page.	Vol.	Page.
ABDOMEN.				
PERITONEUM—				
Serous fluid in,				
Purulent fluid in,				
Sanguineous fluid in,				
Tuberculosis of,				
Cancer involving,				
Foreign body in,				
Inflammation of,				
Adherent to parietes,				
Hernia, { Internal,				
{ External,				
STOMACH—				
Malformations of,				
Cancer of,				
Perforation of,				
Adhesion to liver and absence of part of wall,				
Congestion of,				
Inflammation of,				
Ulceration of,				
Distension of,				
Small bloody extravasation of,				
Tuberculosis of mucous membrane,				
ESOPHAGUS—				
Stricture, { (a) simple,				
{ (b) cancerous,				
Dilatation of,				
LIVER—				
Malformations,				
Fatty,				
Waxy,				
Nutmeg,				
Hypertrophy of,				
Atrophy of,				
Tubercle of,				
Tumour in,				
Cancer in,				
Cysts in,				
Bony nodules in,				
Hydatid cyst in,				
Other parasites,				
Earthy deposits in,				
Abscess in,				
Infarction of,				
Fissures of,				
Cirrhosis of,				
Lobulation of,				

ABDOMEN (<i>continued</i>).	PAGE IN PATHOLOGICAL RECORD.	
	Male.	Female.
	Vol. Page.	Vol. Page.
LIVER (<i>continued</i>)— Yellow patch on surface of, Inflammatory adhesions to peritoneum, Capsule adherent, „ thickened, Biliary obstruction and staining,		
GALL BLADDER AND MAIN DUCTS— Gall stones in, Obliteration of duct, Distension of, Bile gelatinised in, Cancer involving, Ductus communis obstructed,		
SPLEEN— Capsule thickened, Capsule puckered, Cysts in, Waxy, Earthy deposit in, Tubercle in, Fissured, Pulpy, Enlarged, Secondary spleen, Congested, Infarction of,		
PANCREAS— Hypertrophy of, Atrophy of, Cysts in, Tubercle in,		
KIDNEYS— Malformations, Fatty, Waxy, Abscess of, Cysts in, Calculi encysted in, Calculi in pelvis of, Hydronephrosis, Dilatation of ureter, Simple atrophy of, Simple hypertrophy of, Infarction in, Hæmorrhagic extravasation on surface, Large congested kidney,		

ABDOMEN (<i>continued</i>).	PAGE IN PATHOLOGICAL RECORD.			
	Male.		Female.	
	Vol.	Page.	Vol.	Page.
KIDNEYS (<i>continued</i>)— Large pale kidney (not waxy), Small kidney, smooth, Small kidney, granular, Capsule adherent, Multiple abscesses, Pelvis congested, Pelvis hæmorrhagic, Pyonephrosis, Local tuberculosis, Disseminated tuberculosis, Tuberculosis of ureter, Cancer, Other tumours,				
BLADDER— Distended, Inflammation of, Calculi in, Diverticulæ, Hypertrophy of muscular coat,				
PROSTATE GLAND— Enlargement of, Cancer of, Tuberculosis,				
SCROTUM— Affections of,				
TESTICLES— Absence or malformations of, Calcareous deposit in, Tuberculosis of, Tumours of,				
PENIS— Malformations, Phymosis, Paraphymosis, Cancer of, Ulcers of,				
MESENTERIC GLANDS— Enlarged, Cancer of, Tuberculosis of,				
OMENTUM— Tubercle of, Cancer involving,				

ABDOMEN (<i>continued</i>).	PAGE IN PATHOLOGICAL RECORD.			
	Male.		Female.	
	Vol.	Page.	Vol.	Page.
INTESTINES— Malformations, <i>Post-mortem</i> discoloration of, Gaseous distension of, Arterial injection of, Venous injection of, Waxy, Ulcerations of duodenum, Tubercular ulceration of jejunum, Do. do. ileum, Do. do. ascending colon, Do. do. transverse colon, Do. do. descending colon, Non-tubercular ulcerations, Strangulation of, Constrictions of, Intussusception of, Rupture of, Croupous inflammation of, Inflammatory matting of, Ulceration of cæcum, Affections of vermiform appendage, Herniæ, Diverticula, Twists of, Piles, UTERUS— Malformations, Myoma, Cancer of, Other tumours, Calcified tumour in, Enlargement of, Mucous polypus in, Cysts in broad ligament, Dermoid cysts in broad ligament, Prolapse, Adhesions of, OVARIES— Malformations of, Colloid cystoma, Cysts with dendritic vegetations, Cysts largely solid, Dermoid cysts, Solid tumours, PELVIC CAVITY— Hæmorrhagic cysts in,				

BONES—EXTERNAL LESIONS.		PAGE IN PATHOLOGICAL RECORD.	
		Male.	Female.
BONES.		Vol. Page.	Vol. Page.
Abnormalities, Tuberculosis, Caries, Fractures, Soft condition of, Exostosis, Tumours of, Sinus in, Abscesses in, Necroses of, Curvature of,			
EXTERNAL LESIONS.			
Gangrene, Bed sores, Bullæ, Contracture, Hæmatoma, (Edema of legs, arms, &c., Tumours of the breast, Mottling of the legs, Markings or discolorations from old ulcers, &c.,			

A CASE OF EXTIRPATION OF THE UTERUS FOR FIBROIDS.*

By J. K. KELLY, M.D.,
Lecturer in Gynæcology, St. Mungo's College.

THE case I have to bring before you is that of an unmarried lady, Miss G., aged 46.

I was asked to see her on 10th October, 1890, as she was suffering from some uterine enlargement, which was causing obstruction to both urine and fæces, the symptoms of obstruction having become rapidly worse during the preceding few days. The catheter had, for some days, been required in order to relieve the bladder; it had been passed with some difficulty,

* Read before the Obstetrical Section of the Medico-Chirurgical Society of Glasgow, 21st November, 1890.

and had caused considerable pain. There was some flatulent distention of the bowels, and, following on the administration of purgatives, she had a good deal of tenesmus. She was menstruating, and there had been some delicacy in making a vaginal examination on this account, as well as on account of her being unmarried. When I saw her it was agreed that we should administer chloroform, both to pass the catheter without pain and also to examine the parts thoroughly.

On examination, it was evident that the pelvis was occupied by two tumours, one behind and one in front of the uterus. The posterior tumour was the smaller and softer. It lay to the left of the middle line, its posterior convexity being projected, as it were, towards the sciatic notch. Through the rectum it gave the impression of being slightly movable, but, even with considerable force, it could not be pressed up towards the pelvic brim. The anterior tumour was exceedingly hard and filled the whole curve of the pelvis in front, crushing the urethra between it and the pelvis. Its upper surface reached slightly above the pelvic brim and it seemed quite immovable.

After the examination, I expressed the opinion that we had here two uterine fibroids; that the acute exaggeration of the symptoms might be due to some possibly malignant degeneration of the anterior one, and that the early removal of the tumours seemed indicated by the threatening impaction of the pelvic contents.

On further inquiry we obtained the following history:—For 10 or 12 years Miss G. had had very free menstrual discharge, always accompanied with pain. For several months she had felt swelled, and had pains in her legs. She always liked to lie down, when she could, during menstruation, and was always specially swelled before the discharge came. Her periods, however, were quite regular—every 28 days. Two months previous to our examination she began to have some difficulty with her urine. Frequently she could not pass it at night before going to bed, but in the morning she would get it away all right. She was always constipated, but, as a rule, had no pain in defæcation.

She had grown much thinner of late, and felt less able than usual to do her housework, but, with a reserve not uncommon among maiden ladies, she had never thought it worth while to complain. The only complaint she had ever had was of rheumatic pains, which occasionally troubled her, especially in the elbows.

There could be no doubt about the character of the tumours,

and in presence of the suspicion of commencing malignancy, and also of the continued difficulty in catheterising, it was decided that an operation should be attempted without delay.

This was done on 13th October. Dr. Stewart gave the chloroform; Dr. Peden and Dr. A. L. Kelly assisted. The abdomen was opened in the middle line between umbilicus and pubes. The bowels were found slightly distended, and the incision was carried up on the left side to the level of the umbilicus. The intestines were laid in a warm towel. The tumour, which nearly filled the brim of the pelvis, was caught with hook forceps and drawn up as far as possible. The bladder, the walls of which were highly cedematous, projected above the tumour in front, and was peeled off all the anterior surface. The tumour being drawn to each side in succession, the tube and ovarian vessels were ligatured and divided, and the peritoneum pulled off all round the tumour. An elastic band was applied round the cervix, and amputation was performed below the place of origin of the tumours. The canal of the cervix was touched with strong liquor ferri perchloridi, the raw surfaces were drawn together with continuous suture, and the stump carefully covered with peritoneum. The edges of the broad ligament on each side were also brought together after the removal of the ovaries and the outer ends of the tubes, so that the whole floor of the pelvis was covered with peritoneum, except at the left side, where it was found impossible completely to cover the pouch where the posterior tumour had lain. The pelvis was mopped out with sponges. Bleeding, on the whole, was very slight. The abdominal wound was sewn together in layers—peritoneum first, then muscles, then skin and subcutaneous tissue. The surface was dusted with iodoform, a layer of salicylic wool was laid over it, and the abdomen was covered with wood-wool wadding fastened by a bandage.

The operation lasted two hours. Four ounces of chloroform were used. Once or twice there seemed a tendency to syncope, but, on the whole, the chloroform gave no difficulty.

After the operation the only thing that annoyed us much was an attack of cystitis, which, however, did not come on till the second week, and as it was at first unobserved it raised the temperature to $103^{\circ}4'$ on the eighteenth day. I regretted I had not washed out the bladder after the operation, as I had intended, but we were naturally disinclined to disturb our patient, and the urine did not present at first any suspicious characters. It came away from the first without the use of

the catheter. On 30th October we began washing out the bladder with boracic solution two or three times a day, and continued this for a week, the cystitis having then completely disappeared.

The tendency to constipation was combated by occasional small doses of sulphate of magnesia.

We had no trouble with vomiting, though there was occasional retching on the day following the operation and for a day or two thereafter.

From the tenth to the fourteenth day she suffered slightly from her old rheumatic pains in the elbows and from a headache. During this attack the temperature rose slightly, the highest point reached being 101.4° on the eleventh day. Some alkaline mixture was administered with a view to relieve these pains, and flannel was wrapped round the joints.

The wound healed by first intention, and on 2nd November, twenty days after the operation, she was out of bed for the first time. On 9th November, twenty-seven days after the operation, I made a vaginal examination, and took the following note:—"Vaginal portion normal in shape and size, bordered all round the vaginal fornices with a cord-like ridge. Pressure causes no uneasiness whatever, and there is no feeling of fulness above the stump." I may add that the parts roofing the vagina seemed entirely free from any inflammatory thickening.

The tumours, as you see from the specimen (which two days after removal weighed 25 oz., and measured 7 inches in its long diameter, and $4\frac{1}{2}$ in its greatest breadth), are pure fibroids. The posterior one is probably of more recent growth than the anterior, and the cause of the acute symptoms, instead of being commencing malignancy in the anterior tumour, as we imagined it might be, is probably to be found in the somewhat rapid growth of this softer tumour, the peculiar position of which, thrust as it were into the sacro-sciatic foramen, prevented it from finding room in an upward direction.

Both tumours grow from the cervix—a less usual site than the body of the uterus—and this situation explains the dragging upwards of the bladder by the anterior tumour, which had evidently originated below the utero-vesical reflexion of the peritoneum.

The specimen lay in the pelvis like the head of a foetus in the left occipito-posterior position, if we regard the smaller tumour as representing the occiput.

With regard to the operation, I consider that in the circumstances it was the only one to be performed. Removal of the

ovaries and tubes, or Apostoli's treatment might have been tried with some prospect of benefit months or years before, but considering the urgency of the case, the choice lay between an operation for enucleation of the tumours and the removal of both tumours and uterus, the latter of which seemed to me the easier and likely to be the more successful.

ON A CASE OF PULSUS BIGEMINUS OR CARDIAC COUPLE-BEAT, COMPLICATED BY A QUADRUPLE AORTIC MURMUR.*

By J. WALLACE ANDERSON, M.D.,
Physician to the Royal Infirmary, Glasgow.

MR. PRESIDENT AND GENTLEMEN,—I am about to narrate shortly to you this evening a case which may be described as having just escaped being one simply of aortic obstruction and regurgitation, occurring as a consequence and a complication of repeated attacks of sub-acute rheumatism. This, I might say, is the proposition of my subject; and I ask your attention to it, as it is the key to what would otherwise be an obscure and difficult case. I say it narrowly escaped being one simply of ordinary obstruction and regurgitation. But there was in addition that peculiar rhythm of the heart—itsself worthy of remark—known as “couple-rhythm,” or the *pulsus bigeminus*; and these two associated conditions brought out a very rare, in my experience a unique, cardiac phenomenon, namely, a distinct quadruple aortic murmur.

T. P., aged 24, tinsmith, was admitted to Ward VII of the Royal Infirmary, on 28th October, 1890, complaining of pains in the chest and back of left shoulder, and also of indigestion. The family history has no special bearing on the case, except that his father had occasionally rheumatic pains in his knees.

Personal History.—With the exception of his having had measles in early childhood, he enjoyed uninterrupted health till he had rheumatic fever when 12 years of age. This would be in 1878. The attack appears to have been followed by a transient chorea. He remained well till 1882, when he had another attack of rheumatism, and in January of 1885 he had a third attack. In May of the same year he suffered from pain in the chest and breathlessness, and was admitted to

* Read before the Glasgow Medico-Chirurgical Society, 19th December, 1890.

Ward VII, then under the charge of my colleague, Dr. Wood Smith. In the *Journal* of that date, the following is reported of the heart:—"No increase of cardiac dulness; apex beat in fifth interspace. There is a distinct thrill felt over the apex. On auscultation, a loud, coarse A.S. mitral murmur is heard, and also a softer V.S. mitral murmur. Lungs normal." He left the Infirmary "improved." Thereafter he kept well for two years, when he took a fourth attack of rheumatism, and was ill for four months. Recovering again, he continued fairly well till last February, when he suffered from "influenza." About the same time he says his stomach began to fail, his appetite was poor, and he had frequently pain after taking food. About the month of April he began to suffer a good deal from breathlessness, and has never been quite free from this since.

Present Condition.—The chest is fairly well formed, expansion good, lungs normal. The cardiac dulness, however, is increased a little to the left and downwards, and the apex beat is felt in the sixth interspace, immediately beyond the vertical nipple line. On auscultation, a loud, hissing systolic, and a softer and more prolonged diastolic murmur, are heard at the base. Each murmur is characteristic, not alone in respect of quality, but also as regards distribution. The systolic is best heard over the second right costal cartilage, and is so loud there that it can be heard while the ear is still an inch or two from the stethoscope. It is carried upwards faintly to the root of the neck, and becomes also rapidly weaker in passing down the sternum and towards the apex; indeed, it can be traced even into the axillary region, so that here there is possibly in addition a mitral element in the murmur. The diastolic murmur is not carried upwards or towards the apex, but is heard with about equal intensity over the lower two-thirds of the sternum. Urine specific gravity 1024; no albumen, no sugar.

For a day or two after admission there was no change in the patient's condition, but on 3rd and 4th November he complained of pain over the stomach, especially after taking food, and of want of appetite; and on examining the heart on 5th November, there was heard for the first time, what might be described as one long murmur distinctly broken up into four component parts. On careful examination it was not difficult to appreciate. The first part, or first murmur, was the loudest and most hissing; the last was next in intensity, and the most prolonged; while the two murmurs that came between appeared to be equally faint, soft, and short. There could be no doubt of these two inner murmurs being distinct.

the one from the other, but to distinguish them in any practical way as regards character was, I believe, impossible. *

And now, on directing our attention to the radial pulse, it was found to be distinctly bigeminous: a weaker impulse followed quickly on each primary beat, and then there was the longer interval, followed again by the primary beat, and so on. It was too palpable for dirotism, but of course the conclusive test was the fact of there being a synchronous double beat of the heart. The sphygmographic tracing, No. I, was taken on this date (5th November).

For the next eight days there was practically no change in either the murmur or the pulse. Meanwhile my hospital assistant, Dr. Broom (to whom I am indebted for the careful pulse tracings and other observations), Dr. Oliphant, the majority of the resident physicians, and the senior members of my clinical class, had listened to the murmur, and quite agreed as to its character. The pulse tracing No. II, taken on the 11th, simply corroborates that taken on the 5th inst.

On the evening of 13th November, Dr. Broom noticed for the first time that there was an occasional single beat of the radial pulse among the double beats, and we had previously remarked that the patient had been improving a little as regards the gastric symptoms.

On 14th November the following note was made by Dr. Broom:—"The pulse is observed to be changing character. In the morning three double beats were followed by a single one quite regularly, which in the afternoon there were about an equal number of single and double beats. (See tracing No. III.) At night again there was a preponderance of single beats." It was evident that the single beats were increasing in frequency as the patient was improving in respect of his stomach symptoms.

On 16th November only three murmurs could be distinguished over the sternum, and to my mind there could be no doubt this was caused by the fusion of the two shorter and feebler middle murmurs already referred to. And now to the finger the radial pulse was once more single, although the sphygmographic tracing No. IV discloses a slightly marked second beat.

On the following morning I summarised the patient's general condition, noting *inter alia* that (1), when the cardiac beat is

* In this description I have been careful to keep within the mark, as the condition cannot be further verified now. But from the first, I rather deprecated any attempt at a more specific criticism of the murmurs as sounds.

single, patient feels in better health (comparative freedom from stomach disorder); and (2), when the *pulsus bigeminus* is present, the rate of the heart, counting only primary beats, is much slower than when it is of the ordinary character, averaging not more than 35 in the minute. When beating single it averages about 70.

On 18th November he complained to me of the rheumatism coming back again in various joints, and as I thought he had possibly been too much under examination, I ordered his removal to a side-room, that he should be kept quiet and have 20 grain doses of salicylate of sodium every four hours. On the following morning I found him perspiring profusely; there was a slightly livid pallor of the countenance, and the temperature was sub-normal; but he said he felt better altogether, and had only a little pain in the right shoulder. I directed the nurse to sit by him for a little, gave some other general instructions, and left the ward. He expired almost immediately afterwards without any warning. A *post-mortem* examination was absolutely refused.

And now, gentlemen, in reviewing the case for a few minutes there are these two distinct yet connected features of interest to be considered, namely, the curious, unique so far as I know, quadruple murmur, and the *pulsus bigeminus* or 'couple-rhythm' of the heart. The last, as really determining the phenomenal character of the other, we shall take up first.

The *pulsus bigeminus* was first systematically described by Traube, I think in 1872, although, he says, he had referred to it and named it so, some years before that. We shall see immediately that the late Hyde Salter, in 1871, speaks of the cardiac couple-rhythm. Traube's views regarding its nature seem to have been based entirely on certain experiments on the lower animals, and were therefore purely hypothetical as regards its occurrence in man.

Guttmann, in his *Handbook of Physical Diagnosis* (New Sydenham Society's Translations, p. 241), says:—"The cause of the bigeminate pulse has not yet been satisfactorily made out. This and other modifications of the rhythm of the pulse are sometimes discovered in animals in which the intracardiac blood-pressure is augmented. In men it is associated almost exclusively with the existence of some obstruction to the circulation (valvular defects, &c.)." Here we have the assertion that practically it depends on cardiac valvular defects. Is it so?

It must be admitted that our case, with its serious organic lesion, lends support to that view; but I think a careful

consideration of one or two points will lead rather to an opposite opinion. At any rate, if I were called upon to take a side, it would be on behalf of its functional origin. But I shall only say of such a difficult question, that I believe this disturbed rhythm belongs, like functional palpitation, to the *spasmi*; that it is purely a neurosis, a disorder of innervation. We are all familiar with that harmless form of palpitation that is so essentially transitory, so irregular that we can neither explain its coming or its going, unless we can ascribe it, as often we rightly do, to some gastric derangement; and there was something very like this in my case, as I have endeavoured to show. There was undoubtedly a very close relationship between the dyspepsia and the allorhythmia. The former preceded the first discovery of the disturbed rhythm by forty-eight hours, and the latter as surely began to pass away as the stomach symptoms became less and less marked. It may have been a coincidence, but there is no doubt of the fact. This transitory character of the *pulsus bigeminus* is, I think, a common feature of it. It was noticed lately in one of my hospital patients, on one particular morning, and never occurred again, though carefully looked for. Hyde Salter also refers incidentally to this in speaking of a case of bigeminate pulse, so far back as 1871. Let me quote a few lines from the account he gives:—"These impulses thus running in couples were very conspicuous; two cardiac impulses were seen to succeed each other rapidly, and then a pause succeeded, followed by another pair of impulses, and so on. . . . The pulsation at the wrist due to the second beat was decidedly weaker than that due to the first. The interval between the pairs though quarter than that between the pulsations of each pair was not twice as great; so that it was evidently not an intromission of every third beat."* In a few days this remarkable rhythm, he tells us, *ceased and never re-appeared*.

From considerations such as these, it is reasonable to conclude that the disorder we are considering is a functional one, and not dependent on a structural lesion. It is characteristic of organic mischief to be more or less permanent, and so would we expect its effects to be; it is characteristic of a functional disturbance rather to come and go. Besides, structural disease of the heart is common; the bigeminate pulse is a comparatively rare phenomenon.

I had got as far in my study of the question, when I was reminded of Professor Gairdner's case of disordered rhythm in the *Glasgow Medical Journal*, August, 1872, p. 547. It is

* *Lancet*, 19th August, 1871.

entitled "Rhythmical irregularity of pulse—strong and feeble pulses alternating with a certain amount of constancy for minutes together"—&c., and sphygmographic tracings, similar to those I have shown you, and as typically of the bigeminous type, illustrate the account of the case. Let me quote the first half-dozen lines:—"Andrew A., aged 60, was admitted to the Glasgow Royal Infirmary on the 6th May, 1872, with the symptoms and physical signs of *bronchitis*." On admission, he did not complain of any cardiac affection, but when closely questioned, admitted that he was occasionally troubled with palpitation. After several examinations, Dr. Gairdner gave it as his opinion that there was *no evidence either of hypertrophy or of valvular lesion of the heart.*" The italics are mine. So far as could be made out, it was a case of bronchitis without organic change in the heart. Then there was the same instability in the disordered rhythm as in my case. We are told, "in the morning, for minutes together, it was often perfectly regular, then two or three irregular or feebler beats might be interposed, and then the regular rhythm again resumed. As the day wore on, the irregularity usually became greater, and in the evening, on one occasion, the *rhythmical* irregularity above described was observed to preserve its perfectly unchanged character for five consecutive minutes." The carefully taken tracings of Dr. Gemmell clearly illustrate this variability.

All this, I think, is evidence enough against the acceptance of the valvular defect theory of Guttman and in favour of a functional origin.*

The more precise question, Through what particular nerve channels is this disturbed rhythm brought about? is one which the clinical observer must approach with much reserve. And yet I think our every day experience of disease is fitted to throw some light on this difficult question. To begin with, we all know that under certain conditions the cardiac contractions will continue for a considerable time after the removal of the heart from the body; and the physiologist tells us that the cardiac rhythm is in all probability initiated and carried on by those minute ganglia which are found in the muscular walls, particularly the auriculo-ventricular septa. Now, what I think we may venture to maintain is, that while these ganglia initiate movement, the pneumogastric and sym-

* I am perhaps the more disposed to speak as if I were pleading for the functional origin of the *pulsus bigeminus* from the fact that authorities from Traube onwards seem to be entirely on the side of the structural explanation.

pathetic modify or control it. We may suppose it probable that while by these ganglia the heart acts, it acts in harmony, in touch, with the whole economy through the pneumogastric and sympathetic branches. And so I think it was through these channels that the gastric disorder affected the cardiac rhythm in the case before us. The connection between these two organs is, we know, very intimate, and it is remarkable how with all the apathy of the stomach to certain forms of irritation, some of its disorders speedily affect the heart, inducing well marked cardiac collapse. It is a far cry from the vulgar colic to the ablation *secundum artem* of the peritoneal cavity, and yet we often find great cardiac prostration with the first, and may have seen sudden and permanent arrest of the heart's action believed to be due to the second.

From such reflections as these, gentlemen, I think we may reasonably conclude not only that the *pulsus bigeminus* is, in the majority of cases, a functional disturbance; but that this disturbance, wherever it may happen to arise, in the stomach or elsewhere, is conveyed through the pneumogastric or sympathetic, or through both.

With regard to the other feature of the case, the quadruple murmur, I have little to say. It is interesting mainly as a curiosity. I have no doubt that the first murmur was synchronous with the fairly complete ventricular systole of the primary beat, that the two faint intermediate murmurs represented the partial diastole and systole respectively connected with the second feeble beat, and that the last long soft murmur accompanied the complete diastole before the pause. The complexity of this cardiac cycle might just at first sight make one doubt, but the complexity is chiefly in the description. The mechanical difficulty in such a case would be really no greater than in that of a very rapid pulse.

The sudden end is another example of the danger of aortic regurgitation. What else may have contributed, it is impossible, in a case so complicated, to say. But it reminds us that while all forms of valvular disease may spare longer than was till lately supposed, when aortic regurgitation does strike, there is but one way.

ON THE PLACE OF THE DEBATING SOCIETY IN
THE EDUCATION OF THE MEDICAL STUDENT.*Being an Introductory Address delivered in the St. Mungo's College Medical Society, on the 15th November, 1890.*BY JOHN LINDSAY STEVEN, M.D.,
Honorary President of the Society.

GENTLEMEN,—My first duty in taking the chair as Honorary President of the St. Mungo's College Medical Society is to express my hearty thanks to you, its Members, for the great honour you have done me, in electing me to fill this important office for the ensuing session. I wish to assure you that I do regard the position, which, by your suffrages, I now hold, as a great personal honour, the first indeed of the kind which I have ever received, and as such I shall always prize and value it. It must ever be a pleasant thing to receive the approval of those among whom, and for whom one labours, and not the least of the many pleasurable feelings with which I now accept this office, is the sense that in some measure your action shows that you have appreciated the work I have endeavoured, however imperfectly, to do in your midst, during the last five years. For although I only became one of the Lecturers in the School last session, I have, since my appointment to the medical staff of the Hospital some five years ago, always done my best to utilise for your instruction and benefit the valuable field for clinical teaching which the out-patient department of this great hospital affords. To me indeed, I can honestly say, this part of my work has always been a labour of love, and not the least valuable part of it, so far as I personally am concerned, lies in this, that during these years I have made the personal acquaintance of very many of the past and present Members of your Society, not to speak of many friendships, which I sincerely hope may be enduring and true.

I shall do my best to discharge satisfactorily the duties of this honourable office, but when your energetic secretary informed me that one of these duties was to deliver an introductory address within the first fortnight of the session, I must confess I felt a little staggered. Not because I had anything to say against the desirability of the session being opened by an introductory address, but because I fully realised my own inability to prepare one worthy of the occasion in the time at my disposal. However, my friend Mr. Hall kindly got me out of the difficulty, by agreeing to my proposal

that I should reserve any formal address till the end of my term of office, and that in the meantime I should offer you a few remarks on the benefits, as an educational factor, of such a Society as your own.

Perhaps I could not introduce the subject more fitly, than by making some remarks of a personal and retrospective nature, and, if I assure you that in what follows I am deeply in earnest, you will excuse any apparent tendency to egotism which they may suggest, and which I sincerely desire to avoid. Next to the influence of my teachers, I owe anything I have been able to effect in professional study, or in the practice of the healing art, to the training I received in the ranks of the Glasgow University Medico-Chirurgical Society, a Society in all respects similar to your own. I joined the Society in my first year of medical study, and I remember as it had been yesterday, the first time I tried to make a speech, the nervous trepidation natural to the occasion, being greatly aggravated by the fiery interruption of my hesitating remarks on the horrors of materialism by a skilled debater, whose appeal to the chair on a point of personal explanation brought my first effort to an untimely close. Had I not spoken and been interrupted on that occasion, I do not think that I could ever have been able to lift my voice in public at all: the nervous feeling soon wore off, and I took regular part in the discussions during all the time of my connection with the Society; the beneficial influence of that first speech remains with me still. I mention this episode for the consolation and encouragement of all the nervous members of the St. Mungo's College Medical Society, and I say to them, do as I did, and you will never to the end of your lives regret it.

In discussing the place of the Medical Society in the education of the medical student, it is necessary to consider in general terms his future, so that we may be able to appreciate how the debating Society acts in preparing for, and moulding that future. This is perhaps no very easy thing to do, but we can at least predicate two things of it, first, that the student of medicine should develop into a good practitioner, and second, that he should become a good citizen—intrinsically considered the one includes the other. We know what a good practitioner is, but we find it difficult to define him. So many qualities of head and heart go to make up the ideal character that a much more skilful pen than mine would be required to figure them forth in adequate language, and I shall not attempt it, although many have, with more or less success. Fortunately the definition of the good citizen has already been written for us. He is

the man who fears God—honours the king—and, above all, loves his neighbour as himself. I cannot define a good practitioner, but I can at least make this negative statement, that unless a medical man is a good citizen in the sense indicated, he cannot be a good practitioner in the fullest acceptation of the term.

How, then, is the Medical Society fitted to assist in the production of this dual character which should form the ideal medical man? In discussing this part of our subject, it may be useful to compare for a moment the work you do within this Society with that carried on in the class-room, so that we may find out what parts of the ideal character are likely to be influenced by the Society's work. Manifestly, one of the most striking features of your work here, as compared with that of the class-room, is that it is independent, so far freed from the trammels of authority, and not subject to the dictation of the teacher. In the class-room, you are subjected to doctrinal statement and dictatorial authority, in order that in due time you may acquire that self-reliance and independence of thought and action, which should be prominent elements in the character of every medical man. In the Medical Society you are for the time free from this restraint, and at liberty to form and express opinions on matters which, in the class-room, should be accepted by you with that modesty and respect which are seemly and right, as between a student and his teacher. Here, then, you experience for the first time a foretaste of that independence of thought which will be expected of you, when once you have been fully prepared for, and have entered upon, the serious business and responsibilities of professional and civil life. And while thus pleading for that docility and modesty which is seemly and right in students, I have also to say, on the part of your teachers, that you will always find them both ready and willing to treat you with that courtesy and consideration which should ever exist between master and pupil, and to look upon you "as an assembly, not of undisciplined school-boys out of school, but as 'gentlemen' preparing, not without the solemnity and gravity proper to men, for the great business of life."

Proceeding now to consider somewhat more in detail some of the educational possibilities of such a Society as this, I should remark that not the least of these is the experience and practice you may here enjoy in the important art of giving intelligible utterance to your opinions and speculations in public. No amount of lecturing, and no application to private study, however close, can help you much in this. Here each

man must strive and act for himself. If you have any thought worth expressing try to utter it. Do not attempt to speak if you have nothing to say. Remember that speech is silvern, but silence is golden; and that nothing can be more contemptible than talk for the sake of talk. A windbag is of all men most miserable; but do not let this truth influence you, if you have strong conviction to utter, and conscientious principles to maintain; and above all, do not let a sense of failure in your first attempt discourage you. One of the greatest speakers of modern times had to sit down in the course of his maiden speech amidst the contemptuous laughter and interruptions of his hearers, but he did so exclaiming—"I have begun, several times, many things, and have often succeeded at last. I shall sit down now; but the time will come when you will hear me." Take courage, then, from the example of Benjamin Disraeli. True it is that the orator is born and not bred, so that we cannot all be orators; but intelligible and grammatical public speech is as much a matter of education as is the practice of any branch of your professional work.

In the Medical Society, too, you gain experience in the methods of organising and combining for the management of your own affairs, for the protection and promotion of your own interests, and for mutual improvement and assistance in matters pertaining to the successful study and practice of your science and art. These are no mean matters, and the unspeakable value of the opportunities you here enjoy can only be fully realised when you are brought face to face with the stern realities of life. Consider it as a privilege, then, that you are permitted within these walls to sit under your own vine and your own fig tree, none daring to make you afraid; encourage to the full the enthusiastic impulses, the high aspirations, and the generous motives with which, as young men preparing for a profession worthy of the highest and best in humanity, I have no doubt you are all animated; and, if in after life you may find that your high ideals are not all to be realised, do not cast aside the lofty emotions of youth, but carry them with you into the forefront of the battle.

Having thus indicated, in general terms, the manner in which such a Society as this is likely to prove of service to you, it may not be without interest if a few words are now said as to the actual work done in the St. Mungo's College Medical Society, and, perhaps, on this part of our subject you will kindly allow me the liberty of offering a few suggestions. The routine work of the Society consists, I understand, in the reading of papers, and the conducting of discussions or debates

on medical and allied topics. It behoves us then, in the first place, to consider the kind of subjects which are best suited for presentation to the meetings of the Society in the form of papers. In this connection it is well to bear in mind that a medical students' society differs from an association of medical practitioners, mainly in this—that a large proportion of the material submitted to to the latter body for consideration and debate must necessarily be matter of experience and practice. It could scarcely be expected that, in a students' society, such matters should be discussed to the same extent, nor do I think would it be desirable. Not that I would exclude the discussion of such subjects altogether, especially from the work of a society, many of whose members have already, as assistants, had some experience of medical practice, but, when they are submitted, I think they should be contributions from the senior members, or perhaps from young medical men who have but recently left your ranks. When you make up your minds to prepare papers on what we are in the habit of calling the practical subjects, I think they should take the form rather of critical commentaries, than of essays formulating dogmatic statements, or propounding firm convictions. In this way, I think, you will derive the greatest benefit from your efforts to deal with such practical questions as the diagnosis, prognosis, etiology, and treatment of diseases general and special; the problems of sanitary and medico-legal science; and the practice of obstetric medicine. What I wish to urge is that, in dealing with such subjects, where experience and age alone can justify positive statement, or decided opinion, you should preserve that modesty of expression which is becoming in youth, and that openness of mind which is ready to receive influences for good from whatsoever source they may emanate.

With regard to subjects of a more strictly scientific (using the word in its restricted sense, because all true medicine is scientific) and speculative character, these restraints are not placed upon you to the same extent. A general knowledge of many of these is expected of all educated and cultured men, and therefore many of you, from your previous avocations, must be in a position to offer to the Society valuable and original contributions in this department. Evolution, the descent of man, the origin of species, the comparison of instinct with reason, the relationship of mind and matter, the cell theory, and the germ theory of disease, are a few among many scientific problems which possess an intense general, as well as a special medical, interest and importance. I think that the

discussion of questions similar to these should form a large portion of the subject matter of papers communicated to your Society, and I feel assured that, in the present stage of your studies, they will prove of even greater educational value than the discussion of the more strictly professional subjects already referred to. Perhaps, also, you will excuse me if I say, in reference to the branch of science which it is my duty and privilege to expound, that I think pathological topics are specially fitted to engage the attention of the essayists of your Society. There are many arguments which might be employed in support of this opinion. Pathology is as yet a comparatively young science, at least in its modern developments, and therefore it is chiefly to the younger and presumably more energetic members of the profession that we must look for further advances. Another most cogent reason why pathological science should engage much of your energy is, that during your student days and the earlier years of your professional life you will have more opportunities and longer time for its prosecution and study than the majority of your number are ever afterwards likely to enjoy. In the pathological department of this great hospital, you have a splendid field for work, and I am glad to say that your late president, Mr. Mc'Corrie, has already rendered me valuable assistance in addition to having undertaken pathological inquiries of great importance. Others of your number are already following his example, and allow me to say that I am always ready to encourage and help on such good work.

With regard to the other parts of your routine work, the conducting of discussions and debates, it is to be remembered that they differ in some important respects from papers or essays. They are not so formal; it is not expected that they should deal so much with minutiae and details; and they afford facilities for training in that readiness of speech and that rapid criticism of statement which are so essential in all good debating. It is no mean accomplishment to be able speedily to lay hold upon the weak points of an argument, and lay bare the fallacy it contains. It is, therefore, of great importance that each session your syllabus should announce to the members that one or two good discussions are to be held.

There are many subjects suitable for debate which might be mentioned, but I shall only refer to one or two which I regard as of special interest to gentlemen preparing themselves for the medical profession. I think you should, if possible, devote one of your meetings to the question of vivisection; the only

difficulty, however, which you are likely to experience in dealing with this matter is that of finding members willing to advance arguments in support of the negative side. In Great Britain, legislation on this subject is sadly in need of reform, and the efforts of our best investigators are sadly hampered by the existing state of the law. The benefit to suffering humanity which has arisen from carefully, and I shall say humanely conducted experiments on animals, leaving out altogether the question of the attainment of exact knowledge of physiological laws, no one can estimate. At the present time we seem, through the labours of Koch, to be on the eve of one of the greatest advances in therapeutics which the world has ever seen, and the benefits likely to accrue from which are almost beyond belief, and I ask you, could we dare to have hoped for such a blessing without the help of vivisection? Surely there is a fallacy lurking somewhere in the argument which holds up to public view men like Pasteur and Koch as the perpetrators of inhuman cruelty, in whose breasts there is no remaining spark of the divine emotion of pity. I hope you will give the question of vivisection your earnest attention, and arrive at conclusions which may help to convert our fellow countrymen to right views on this important matter.

The questions of the reform of medical teaching and the improvement of our University system are well fitted to form the subject matter of debates, and I hope you will find a place for them in your scheme of work. I believe that my colleague, Dr. J. K. Kelly, intends to address you on the subject of Medical Utopia, a topic on which he is well qualified to expatiate, and I hope that the results of your visit, with him as guide, philosopher, and friend, to this happy land will be abundantly visible in the future debates of the Society. There has, in most of our legislative action, been too great a tendency to consider the question of the reform of medical teaching mainly from the teachers' point of view; and I think you should endeavour to correct this tendency by proclaiming your views with no uncertain sound. I am quite of opinion that, when young men have been engaged for a year or two in preparing themselves for a profession, they are quite able to formulate views on the methods of education and examination, which are well worthy the consideration of our legislative authorities. I would, however, add this to what I have said on this matter—be modest, be earnest, be honest in your endeavours to arrive at and formulate your opinions, and do not doubt that opinions, showing evidence of having been

arrived at in this spirit, will receive the most thoughtful and considerate attention of all right minded men.

In my time, as a student, one of the favourite subjects for a debate, and one in which, during my second year, I had the honour to lead in the affirmative before a crowded house, was this—Should women be admitted to the ranks of the medical profession? I am afraid, however, that this is a subject which has now passed out of the region of debate into that of practical politics, and what I pleaded for, 12 or 13 years ago, and lost by a narrow majority of 8 or 9 in an assembly of about 100 students, has now become an accomplished fact. The views I held then, I hold now, and, briefly stated, they are these. I do not think that a very large number of women are at all likely to seek entrance to the medical profession, nor on physical considerations do I think it desirable that they should, at least with a view to the routine work of general practice. At the same time, I have always held that if women desire to enter the medical profession, they should have every facility and every liberty to do so. One of the proudest boasts of our nineteenth century civilisation, and especially of Christian civilisation, is that it has elevated the position of woman, has emancipated her from that thralldom to which she has been subjected under other dispensations, and has made her in the truest sense the helpmeet, and not the slave of man. If the modern view as to the position of woman be true, then it follows as an uncontrovertible conclusion that she must have the fullest liberty to exercise her rights. I have every sympathy with the views of those who hold that the true sphere of woman's usefulness is the domestic hearth, but at the same time it must be remembered that there are many women who have not, and are never likely to have, the domestic hearth in the sense spoken of. In this case it is absolutely necessary that women should have the means of supporting life by the free exercise of callings and professions suitable to the station of society in which they have been born. I think that this is the only reasonable attitude we can take up with regard to the medical education of women.

Another matter which has always formed an important part of your Society's work is the effort to form a suitable reference library for the use of the students attending the College, and on this subject I would like to say a very few words before concluding this address. This is an object which should most cordially commend itself not only to you, but to all who have any interest in your welfare. It is a matter on which I think you might invite the co-operation and assist-

ance of the Governors of the College, and I have little doubt that any representations you might make to these gentlemen would receive courteous and considerate attention. Your own efforts in this direction have already been attended with very conspicuous success, and I sincerely hope that this year your annual concert in aid of the library may be quite as successful as any of its predecessors. We live in an age of public libraries, and I would take this opportunity of bringing under your notice the excellent public libraries which are already in existence in our city. In the Mitchell, the Stirling, and the Baillie's Institution Libraries, you will find splendid collections of books, which are freely at your disposal in the reading rooms of each of these institutions, and I would advise all of you, as opportunity offers, to spend an hour or two in making use of them.

Your Society has also an important work to accomplish in the promotion of social intercourse among its members. This is an aspect of our Scottish student life which has been far too little developed, at least as compared with the customs prevailing in the great English schools of learning. In this, however, as in everything else, we are making headway in Scotland, and I hope that the members of the St. Mungo's College Medical Society may have many enjoyable social reunions, to which they can look back with pleasure from the struggles and sorrows of after life.

And now, gentlemen, I have done, as best I could, what I promised your secretary to do on this occasion. I have only to wish you success and God-speed in the session on which you have entered, and I feel that I cannot more fitly end these remarks than by quoting to you the closing sentences of an address delivered to students like yourselves, by one of our greatest living orators and statesmen. He said, "Get knowledge all you can: and the more you get, the more you breathe upon its nearer heights their invigorating air, and enjoy the widening view, the more you will know and feel how small is the elevation you have reached, in comparison with the immeasurable altitudes that yet remain unscaled. Be thorough in all you do: and remember that, though ignorance often may be innocent, pretension is always despicable. Quit you like men, be strong; and the exercise of your strength to-day will give you more strength to-morrow. Work onwards, and work upwards; and may the blessing of the Most High sooth your cares, clear your vision, and crown your labours with reward."

CURRENT TOPICS.

ROYAL INFIRMARY—ANNUAL MEETING OF THE DIRECTORS WITH THE NURSES.—The semi-jubilee of this annual meeting was held on the 1st January, 1891, the Lord Provost occupying the chair. There was a large attendance of the nurses and their friends. Among the gentlemen on the platform were Sir James King, Bart., Sir William Collins, Sir James Bain, Sir Wm. M'Onie, Mr. Wm. M'Ewen, the Deacon Convener, Mr. Hugh Brown, Chairman of the Infirmary, and many others interested in the philanthropic work of the city. The annual address was delivered by Dr. William Macewen, the well known surgeon. He chose for his subject "The Training and Duties of the Nurse," and delivered a most suggestive address. The lecturer was well qualified to speak with authority upon this very important question, and the ideal he placed before his hearers was certainly a high one. With the aim he had in view, every one interested in nursing must most cordially agree, but with regard to some of the details suggested there is perhaps room for difference of opinion. Dr. Macewen pleaded for a profession of nursing, with its classes, examinations, and diplomas. To us it seems that there is ample room for free interchange of opinion on such a proposal. By all means let us have lectures, examinations, and every other method of securing well educated and well trained nurses, but do not let the possession of a diploma be the hall-mark of the nursing profession. With the idea of a nursing profession, the qualification for entering which is the possession of a diploma, we have little sympathy. As the lecturer well pointed out, the life devoted to nursing is in the highest sense a consecrated and a religious life—a life finding its widest expansion and its deepest satisfaction not in the things of time and sense. In such a life the possession of a diploma can never be an absolute factor, and the moment it becomes one it seems to us that our loftiest ideal of the sick-nurse becomes well nigh impossible. We think there can be no middle point between the well trained nurse, as she is at present, and the lady medical practitioner. By all means, if we can get qualified medical women to act as nurses, let us do so; but we fear that women so qualified would not make the best nurses; and very naturally many of them would refuse to accept the position of a nurse. What we want is the careful expansion and carrying out of our present

methods; the provision of all the means of instruction and training; and under these methods the women most suitable for the important work of nursing will be found. To speak of jealously guarding a nursing diploma, is in our opinion a mistake, introducing as it does a worldly element into the most unworldly of all human vocations. No doubt the physician or surgeon feels acutely the importance of trained scientific observation of his patients during his absence; but such observation naturally lies in the hands of his qualified medical assistant, male or female. After all, no diploma is necessary, for the physician or surgeon will rely upon those nurses only, whom he himself, by observation of their work, finds to be reliable. No elevation of nursing into a distinct profession is in our opinion necessary. Nursing is already a profession, and one of the noblest; to introduce the jealousy of the diploma would not be to elevate it. Let lectures, demonstrations, class-prizes, and certificates all be provided, and let the most capable engage in the work, and enrol themselves in the profession of nursing whether they have diplomas or not. If the present methods do not satisfy the desires of women wishing to engage in the care of the sick, the medical profession is open to them; let them enter it.

ROYAL HOSPITAL FOR SICK CHILDREN.—The Ladies' Committee gave their annual treat to the children attending the Dispensary on Tuesday, the 30th December last, at 4 P.M. About 100 of the little patients were present and enjoyed a hearty tea, after which an excellent magic lantern entertainment took place. The meeting was held in the Waiting Hall of the Dispensary, which is excellently suited for the purpose; and before leaving, each of the children received a toy and a suitable piece of warm flannel or woollen underclothing. Mr. Carlile, Chairman of the Directors, presided; and the ladies who had arranged the entertainment looked after the distribution of the Christmas gifts. The gathering was most thoroughly enjoyed by the children, and, while witnessing the pleasure of the little patients, the Committee must have felt that their labours were not in vain and were not without an ample reward.

DR. J. WALKER DOWNIE has been appointed aurist and laryngologist to this Hospital.

PATHOLOGICAL AND CLINICAL SOCIETY.—The fifth ordinary meeting of the Society will be held in the Faculty Hall, 242 St. Vincent Street, on Monday, the 9th inst., at eight o'clock.

The following cases and specimens will be shown:—Dr. Newman—cases illustrative of the use of the cystoscope; Dr. J. K. Kelly—three specimens illustrating the various results of unrecognised pelvic disease; Professor George Buchanan—urinary organs showing condition of prostate after lithotomy six years ago; also, a kidney from which a stone was removed by nephrectomy 18 months ago; Dr. Joseph Coats—a very large obsolete cavity in the lung, and a large active cavity which simulated pneumo-thorax: also, two specimens of hydro-nephrosis of peculiar origin.

THE LATE MR. ALEXANDER MACDOUGALL.—Mr. Alexander Macdougall, printer and publisher, Glasgow, died at his residence, 185 West Regent Street, on Wednesday morning, 7th January. In his death the *Glasgow Medical Journal*, of which he was printer and publisher, has sustained a loss which will be acutely felt for a long time to come. Not many months ago it was our sad duty to notice the early death of his eldest son, Mr. William Macdougall, who most ably assisted his late father in the work of publishing the Journal, and it will not be easy to fill their places. Since the death of his son, Mr. Macdougall had not been in very good health, but for a long time nothing very serious was apprehended, and to many, even of those most intimately associated with him in his work, the end came as a sad surprise.

The deceased gentleman was a native of Glasgow, having been born on the South Side of the city, and was in his fifty-ninth year. He began life as a printer, serving his apprenticeship with Messrs. Bell & Bain, to whom he eventually became manager. Twenty-five years ago he began business on his own account, and for some time subsequently he was in partnership with Mr. Macle hose, of the University Press. Up to the time of his death he carried on business in Mitchell Lane, and was assisted by certain members of his family.

Of Mr. Macdougall as a public man, a loyal citizen, and an earnest useful member of the Christian church, it is not our place to speak; but it is our pleasing, though sad, duty to put on record our grateful acknowledgment of the many valuable services which, over a long period of years, he rendered to the *Glasgow Medical Journal*. To the Journal he was much more than a mere printer and publisher. He took a deep personal interest in all that affected its welfare, and every department of the work received his earnest care and attention. The Editors owed much to the practical suggestions he made from time to time, and they feel that in the conduct of

the Journal they have lost a most helpful and sympathetic colleague. From his position, Mr. Macdougall was necessarily brought much into contact with medical men in Glasgow and the West of Scotland, and we know that in the ranks of the profession he was highly and widely esteemed.

LONDON POSTGRADUATE COURSE.—The prospectus of the Fourth Course for 1891 has just been issued, Mr. Jonathan Hutchinson being president. There are three terms—First term, 12th January to 7th March. Second term, 4th May to 27th June. Third term, 12th October to 5th December. The hospitals participating are the following:—Brompton Hospital for Diseases of the Chest; Great Ormond Street Hospital for Sick Children; National Hospital for the Paralysed and Epileptic; Moorfield Ophthalmic Hospital; Blackfriars' Hospital for Skin Diseases; Bethlem Hospital for Lunatics; Great Portland Street Throat Hospital. The fee for the whole course of 96 lectures and demonstrations is £12, 12s.; for individual courses, £1, 1s. to £3, 3s. The prospectus may be obtained from the secretary, J. Fletcher Little, M.B., 60 Welbeck Street, Cavendish Square, London, W.

CONVENIENT FORM OF FEHLING'S TEST.—We may direct our readers to a form of Fehling's test which has the great advantage of permanency. Practitioners, who only occasionally require to test for sugar, can scarcely trust to the ordinary fluid form of the test, as it goes wrong so readily. Messrs. Burroughs, Wellcome, & Co. have a set of tabloids for Fehling's solution which obviates this difficulty. These are tabloids of tartrate of potash and of sulphate of copper. They are dissolved in caustic soda as required, one tabloid of each being used for each testing. The whole is enclosed in a neat case with the necessary material for 25 separate examinations.

"THE UNITED STATES CENSUS BULLETIN."—We have received the sixteenth number of this interesting publication, and from it we learn that the official count of the population of the United States by states and territories in 1890, is 62,622,250. Some interesting particulars are given with regard to the ease, with which the enumerations were transmitted to Washington as compared with the census of 1850, when the final returns were not received till about a year and eight months after the enumeration had commenced. The present is the eleventh census.

"The population of the United States on June 1, 1890, as

shown by the final count of persons and families, exclusive of white persons in Indian Territory, Indians on reservations, and Alaska, was 62,622,250; including these persons the population will probably reach in round numbers 63,000,000. In 1880 the population was 50,155,783. The absolute increase of the population in the ten years intervening was 12,466,467, and the percentage of increase was 24·86. In 1870 the population was stated as 38,558,371. According to these figures the absolute increase in the decade between 1870 and 1880 was 11,597,412, and the percentage of increase was 30·08.

“Upon their face these figures show that the population has increased, between 1880 and 1890, 869,055 more than between 1870 and 1880, while the rate of increase has apparently diminished from 30·08 to 24·86 per cent. If these figures were derived from correct data, they would be disappointing. Such a reduction in the rate of increase in the face of the heavy immigration during the past ten years would argue a diminution in the fecundity of the population or a corresponding increase in its death-rate. These figures are, however, easily explained when the character of the data used is understood. It is well known, the fact having been demonstrated by extensive and thorough investigation, that the census of 1870 was grossly deficient in the southern states, so much so as not only to give an exaggerated rate of increase of the population between 1870 and 1880 in these states, but to affect very materially the rate of increase in the country at large.

“These omissions were not the fault, nor were they within the control, of the Census Office. The census of 1870 was taken under a law which the Superintendent, General Francis A. Walker, characterised as ‘clumsy, antiquated, and barbarous.’ The Census Office had no power over its enumerators save a barren protest, and this right was even questioned in some quarters. In referring to these omissions, the Superintendent of the Tenth Census said in his report in relation to the taking of the census in South Carolina: ‘It follows, as a conclusion of the highest authority, either that the census of 1870 was grossly defective in regard to the whole of the State or some considerable parts thereof, or else that the census of 1880 was fraudulent.’ Those, therefore, who believe in the accuracy and honesty of the Tenth Census—and that was thoroughly established—must accept the other alternative offered by General Walker, namely, that the Ninth Census was ‘grossly defective.’ What was true of South Carolina was also true, in greater or less degree, of all the southern states.”

After allowing for the sources of error thus indicated, the percentage increase stands as follows:—

		Per Cent.
1860.	31,443,321, . . . . .	...
1870.	39,818,449,	26.6
1880.	50,155,783,	25.9
1890.	62,622,250,	24.8

The following paragraphs from the *Bulletin* may also be of interest, more especially that relating to the agricultural states:—"The general law governing the increase of population is, that when not disturbed by extraneous causes, such as wars, pestilences, immigration, emigration, etc., increase of population goes on at a continually diminishing rate. The operation of this law in this country has been interfered with in recent years by the late war, which, besides the destruction of a vast number of lives, decreased the birth-rate very materially during its progress. It was followed by an increased birth-rate, as is invariably the case under similar circumstances. The normal rate of increase has been, and is, greatly interfered with also by immigration, and it is difficult to estimate the effect of this upon our rate of increase."

"During the past ten years the population of Dakota, considering the two states of North Dakota and South Dakota together, has increased from 135,177 to 511,527, or 278 per cent; Nebraska from 452,402 to 1,058,910, or 134 per cent, and Kansas from 996,096 to 1,427,096, or 43 per cent. This increase has not, however, continued uniformly throughout the decade. In 1885 Dakota contained 415,610 inhabitants, or more than four-fifths of its present population. Nebraska contained 740,645 inhabitants in the same year, thus dividing the numerical increase quite equally between the two halves of the decade, but leaving the greater percentage of increase in the first half. In the same year Kansas by its state census had 1,268,530 inhabitants, showing that nearly two-thirds of the numerical gain was acquired during the first half of the decade. The industries of these States are almost purely agricultural, and are dependent on the supply of moisture, either in the form of rain or by irrigation. Through these States passes what is known as the sub-humid belt, a strip of country several degrees in width, in which during rainy years there is an abundance of moisture for the needs of crops, while in the years when the rainfall is below the average the supply is deficient. In this region little provision has been made for artificial irrigation, the settlers having thus far been content to depend upon rainfall. Into

this region the settlers flocked in large numbers in the early years of the decade, drawn thither by the fertility of the land and by the fact that for a few years the rainfall had been sufficient for the needs of agriculture. During the past two or three years, however, the conditions of rainfall have materially changed. It has fallen decidedly below the normal, and the settlers have thereby been forced to emigrate. Thousands of families have abandoned this region and gone to Oklahoma and the Rocky Mountain region. This migration is well shown in the progress of Kansas, as indicated by its annual censuses. These censuses show a rapid increase in population from 1880 up to 1887; 1888 shows but a slight increase over 1887, while 1889 shows a reduction in the population, leading up to the further reduction shown by the federal census in 1890."

REVIEWS.

A Text Book of the Diseases of the Ear. By DR. JOSEF GRUBER, Vienna. Translated from the second German Edition by ED. LAW, M.D., and COLEMAN JOWELL, M.B. London. 1890.

To the English speaking practitioners of aural surgery this translation of the work of the famous Vienna specialist must be welcome. The old pupils of Gruber will be prepared to find that a leading feature of this work is the anatomical section, which, by way of introduction, takes up well nigh a fourth part of the whole volume. It is questionable, however, whether such a lengthened description of the anatomy of the ear be desirable in a treatise on Diseases of the Ear, especially when the style is so much that of the anatomical text-book, with its minutiae of bare facts, which can be found when required in the many excellent existing anatomical books. It is different when, as in Gruber's own clinique, numerous and excellent dissections and specimens stimulate the attention, and speak to the pupil so much more powerfully than the printed page.

Following the anatomical part are three chapters on the examination of patients, the general pathology of the ear and the general therapeutics of ear diseases. In the first, a full description is given of the application of tests to determine the condition of the hearing—quantitatively and qualitatively—by means of the familiar methods of the watch, speech, and

tuning fork. In testing a patient's capacity for perceiving varieties of pitch, Gruber uses tuning forks of various pitches, but he seems to have had no experience of Galton's whistle, which, though by no means a perfect instrument for the purpose, is still useful in determining approximately a patient's limits of hearing pitch. In the qualitative testing of hearing, however, the chief difficulty lies in the inability of most people to distinguish slight varieties of pitch—only now and then do we meet with musical patients whose statements are reliable.

The relation of bone-conduction of sound to air-conduction, and the bearing of this upon the diagnosis of disease of the nervous structures of the ear, scarcely receive adequate attention in this part of the work. It is true that, in the description of the separate diseases of the ear, references are made to the practical value of Rinne's and Weber's tests; but a fuller and more comprehensive account of this important subject at this stage of the work would have been very useful to the student. The interesting phenomenon of *Hyperacusis Willisii*, or hearing better in a noise, also receives rather scant notice. No mention is made of its diagnostic value as distinguishing middle ear disease from labyrinthine disease.

Objective methods of examination are treated of very fully, and include the modes of examining the nasal passages and naso-pharynx, as well as the ear proper. In regard to the best form of artificial illumination for the ear, the experience of Gruber probably agrees with that of most workers in this country—that gas from a good argand burner is more convenient and effective than any form of electric light yet introduced.

In regard to inflation of the middle ear, Gruber claims, we think on insufficient grounds, to have employed the principle of Politzer's method before its introduction by Politzer. There is, unfortunately, a too apparent disposition throughout the volume to minimize or disparage the work of his eminent colleague in Vienna. The fact that this spirit is reciprocated is not a sufficient justification. In such matters, we should "assume a virtue if we have it not." The process of catheterization of the ear as a method of examination is minutely described. The plan by which Gruber moves the point of the catheter from the posterior wall of the naso-pharynx to the Eustachian tube, namely, by its withdrawal till the beak embraces the posterior margin of the soft palate, and then turning it outwards, is not, we think, much practised in this country. Considering how variable is the condition

and position of the soft palate, this guide is a very uncertain one. The translators, in a foot-note, express preference for Löwenberg's plan. The fact is, that of the modes recommended by various writers, sometimes one, and sometimes another may suit best. The one which is probably found to be the most generally useful is that in which the point of the catheter is turned outwards into the fossa of Rosenmüller and withdrawn over the Eustachian prominence. Only by this method are we able to satisfy ourselves, before inflation and auscultation, that the point of the catheter is really in its proper position, from the characteristic dip of its point into the mouth of the tube after passing over the Eustachian prominence. In Politzerization, Gruber employs a nozzle, in shape like a vulcanite catheter, screwed on to the mouth piece of the bag, without any flexible connection. This by its rigidity is apt to excite pain, as well as cause bleeding from the nasal mucous membrane.

The chapter on the General Pathology of the Ear is disappointing. It consists of one page, and is simply a recommendation to study the Pathology of Ear Diseases. The one on General Therapeutics of Diseases of the Ear is likewise meagre. It merely treats of syringing and pouring liquids into the external auditory canal, and injecting liquids through the Eustachian tube. What about the use of powders, vapours, bougies, electricity, local bloodletting, incision of tympanic membrane, hygienic treatment, and other well-known therapeutic measures employed in aural diseases? This chapter, like the previous one, should either have been omitted, or should have included much more. Gruber's method of injecting liquids through the Eustachian tube, without the introduction of the catheter, by simply syringing into the nasal passage, while both nostrils are closed, requires great caution. It is only suitable where both tympanic membranes are perforated, and when both middle ears are in a state of active purulent secretion. If a dry perforation exists, there is danger of exciting an acute purulent inflammation. If no perforation exists, this risk is still greater. There is no mention made of Hinton's method of injecting fluid through a perforation in the tympanic membrane with a syringe, whose nozzle is fixed water-tight into the external auditory meatus. By this plan, in proper conditions, the injected liquid finds its way into, and washes out the tympanic cavity and Eustachian tube. When this can be done with but slight pressure, it is a much better method than that by syringing from the direction of the naso-pharynx, where there is frequently a quantity of

mucous or purulent secretion which, by Gruber's method, and even by Politzer's bag, is apt to be forced with injurious effects into the middle ear.

In the special part, Diseases of the External Ear are very fully treated. The chapter including Malformations of the Auricle and Hæmatoma Auris is a most valuable one. We miss, however, in the former, any reference to the relation between malformations of the external ear and malformations of the labyrinth, and the light cast upon this by the study of development. Gruber rightly remarks, with regard to hæmatoma, that after a short time the contents appear as yellowish serum, owing to the separation of the solid contents of the blood and their deposition upon the walls of the cavity, where they undergo the further changes which lead to the great deformity of the "shrunk ear." Gruber's plan of treatment is sound, namely, evacuation with an aspirator, followed by pressure.

The arrangement adopted by the author in describing the diseases of the external auditory canal is rather confusing. For example, exostosis of the external auditory canal is mixed up in the same chapter with tumours of the auricle, while the subject of ceruminous collections is relegated to the chapter on foreign bodies in the ear. If we regard excess of secretion as of the nature of a foreign body, then we must include many other affections of the ear, such as muco-serous collections in the middle ear, in that category. In the treatment of exostosis, Gruber seems to limit himself to the chisel and hammer, a method rarely resorted to in this country, since the dental burr and engine have been found so safe and effective. The latter method is no more than referred to in the work, and that in a single sentence in small type. Too much space (twenty pages) is given to inflammation of the tympanic membrane. How rarely is a case of inflammation of this structure seen apart from inflammation of either adjoining cavity.

Probably the most important section of a work on Diseases of the Ear, is that on Diseases of the Middle Ear, and especially the purulent diseases of the middle ear. These, with the exception of one or two important omissions to be afterwards referred to, are treated of very satisfactorily. The chapter on Perforation of the Mastoid is one of the best, particularly in the discussion of the indications for the operation. Gruber gives due credit to Schwartz and Eyell for their work in connection with this subject, the former for his numerous and important records of successful cases, and the latter for his anatomical investigations into the relation of

the mastoid to important neighbouring parts. The details of the operation are minutely given, and a strong preference is expressed for the hammer and chisel. No doubt, this method is preferable to the sharp-pointed trephine or drill, but we venture to maintain that it is not free from the risk of injuring adjoining structures. The concussions caused by the hammering are very undesirable in the conditions which often exist where this operation is performed, such as in cases of cerebral abscess. When the operator has penetrated to some depth in the mastoid without coming to the antrum, it is scarcely possible to wield the hammer and chisel with safety. Such considerations have led Dr. Macewen, Dr. Barr, and others to employ large, globular, dental burrs propelled by a dental engine. Although somewhat tedious, this method is safer and more under control than the hammer and chisel, especially where we are working at some depth in the bone. With care, it is almost impossible to injure the dura mater, lateral sinus, or facial nerve. This method of operation is not referred to in the work before us.

Probably, however, the most serious omission in Gruber's work, is the operative treatment, by trephining the skull, of cerebral abscess due to ear disease. The success of this operation, demonstrated in 1887 by Macewen, Barker, and others, forms an epoch in the history of aural surgery. Such an omission in the original should have been corrected by the English editors who have in several foot-notes supplemented the information contained in the original work. On the whole, it must be said that the references to the literature and work of British surgeons found throughout the work are rather limited, as well as antiquated. A good account is given of the Diseases of the Labyrinth, although the chapter on Deaf-mutism is rather short. The chapter on the Neuroses of the Ear is among the best.

Too much praise cannot be bestowed on the chromo-lithographic plates at the beginning of the volume; these indeed form a most important feature of this work. There are 70 of these beautifully coloured figures, and they include most of the pathological changes which are to be found in the tympanic membrane. They must prove of great value, not only to general practitioners but also to specialists. The translators have done their arduous work well, and have rendered a distinct service to the profession. Especially must the pupils of Gruber in Britain and America—and they number thousands—prize this volume, as bringing to them in their own language the teaching of their former master.

Quain's Elements of Anatomy. Tenth edition. Edited by EDWARD ALBERT SCHÄFER, F.R.S., and GEO. DANCER THANE. London: Longmans, Green & Co. 1890.

THE tenth edition of this well known work is in the press. When completed, the book will be published in three volumes, but as an instalment, two parts, dealing respectively with Embryology and Osteology, have already appeared. In the finished work these will take their place as the first portion of Volume I and II, but we think the editors have done wisely in thus early giving them to the world, not only because the ninth edition has been for some time sold out, but because the parts themselves form complete treatises of convenient size on the subjects with which they deal. The different sections into which human anatomy is divided, show a very different rate of growth. Embryology and histology have advanced of late years very rapidly, osteology and myology by slow stages, and in the parts before us we have evidence of this; but the special feature of the new edition is undoubtedly its illustrations, and the editors are to be congratulated in that they have more than maintained the high standard of excellence of the first text-book in the language.

The portion devoted to Osteology is edited by Professor Thane. The number of engravings has been increased by more than a half, and with the exception of a few, the illustrations, which are partly from the pencil of Professor Thane himself, and partly the work of Messrs. D. Gunn and T. W. P. Lawrence, are all new. Compared with those of previous editions they show a marked improvement, especially in the accuracy of detail and artistic finish, and in these respects they must be regarded as standing at present unrivalled. The student will also regard as an advantage the method which has been adopted of introducing the nomenclature of parts round the figure in place of letters of reference to explanations below. In the letterpress the ninth edition has been closely followed, and compared with the illustrations the descriptions sometimes have the appearance of being inadequate. As an example of this want of balance between figure and text, attention may be drawn to fig. No. 134, which represents the lower end of the femur. Although this has evidently been drawn in the light of the most recent researches on the knee-joint, the descriptive text of the ninth edition, brief and unsatisfactory as it is, is retained unaltered. Doubtless the editors have been influenced by the fear of increasing to too large a size a book already of such formidable dimensions.

What is new is chiefly in the direction of variations, normal and abnormal, in the skeleton, and use has been made of many of the later works, particularly those of Turner, Broca, Topinard, Gruber, and others. It is interesting to note that in the subject of the ossification of the skeleton little advance has been made of recent years, and that the diagrams of earlier editions are still sufficient to fully illustrate the subject.

The portion devoted to Embryology has been edited by Professor Thane. Of late human embryology has had much added to it by the labours of His, but in all departments the number of workers has been very large. The new edition is thoroughly up to date. Although not markedly exceeding in size the previous editions, and perhaps more exclusively devoted to human embryology, it is far in advance of its predecessor in the wealth of its illustrations and in the completeness of its reference to the literature of the subject. The discussion of general theories, as those of Weisman and Minot on heredity, and those of Balfour, Lankester, and others, on the origin of the germinal layers is wisely curtailed, while on the other hand the details of the development of the organs have been considerably expanded. Of the work generally it may be said that while the descriptions are sufficient for the student who desires a thorough general acquaintance with the subject, the references to the recent literature are so complete that he can easily follow to its full study any particular branch.

A Handbook of the Theory and Practice of Medicine. By FREDERICK T. ROBERTS, M.D., B.Sc., F.R.C.P., Professor of Materia Medica and Therapeutics, and of Clinical Medicine, at University College, London, &c. Eighth Edition. London: H. K. Lewis. 1890.

Two years only have elapsed since we noted the appearance of the seventh edition of this well-known text book. In that time there has been no great addition to our knowledge of medical diseases (the result of Dr. Koch's experiments being of too recent date to find a record here), and hence we do not find much to remark upon in this edition. We can only say that the work is well up to date, and can be recommended to students and others as a very safe guide to the theory and practice of medicine. The fact that it has passed through so many editions in a few years says more for the manner in which it meets the wishes of those for whom it is intended than anything that we could write.

Manual of Urine Testing; including the Physical Characters, Qualitative and Quantitative Examination of the Urine; together with the clinical information to be derived therefrom. Edited by JOHN SCOTT, B.A., Undergraduate in Medicine, Royal University of Ireland. Belfast: W. Mullen & Sons. 1890.

Within nineteen pages of a waistcoat pocket volume Mr. Scott attempts to compress all that is known about the urine. That he has not succeeded in doing so in a satisfactory manner is not to be wondered at. There are errors of omission, and errors of commission, but we do not think it necessary to spend time in showing how we would amend this booklet. It belongs to a class for which we have no liking: to the student it is worse than useless, and it is only as a reminder in a few cases that it can be of service to the practitioner.

MEETINGS OF SOCIETIES.

GLASGOW PATHOLOGICAL AND CLINICAL SOCIETY.

SESSION 1890-91.

MEETING II.—10TH NOVEMBER, 1890.

The President, DR. DAVID NEWMAN, in the Chair.

I.—CASE OF MORPHŒA.

BY GEORGE S. MIDDLETON, M.D.

Dr. Middleton showed a girl of 11 years suffering from morphœa, who had been admitted into the Royal Hospital for Sick Children on 8th September, 1890. About fifteen months prior to admission the first patch appeared in the right groin, and was about the size of the finger-tip when first seen. It gradually enlarged, and others made their appearance, the history bearing, however, that there had been a more marked increase in the number within the last two months. The patches were situated in the groins and over the lower portion of the trunk, both in front and behind. They numbered about twenty, but some had coalesced. They varied in size from three quarters of an inch to 3 inches in diameter. Most of them were surrounded by a border, about one-eighth of an

inch in breadth, of skin of rather a darker hue than normal, due in some cases to pigmentation, in others to injection of the capillaries, and contrasting strongly with the silvery whiteness of the affected patches. The most advanced patches presented a somewhat depressed appearance, were densely white in colour, and had as their most characteristic feature, a peculiar lustre or sheen. They were also harder or less elastic than the normal skin. In less advanced stages the patches were less white and more elastic, and not at all depressed. There was no loss of sensation in these patches, and no tenderness on pressure. Besides these there were on the skin other small, pale, spots, apparently the cicatrices of chicken-pox, and on the scalp little eczematous areas.

The girl's body presented a well nourished appearance and the limbs were well formed. She was slightly anæmic, and her heart's action was a little irregular. She had had in infancy, chicken-pox, measles, bronchitis, and whooping-cough, but had been quite strong in early childhood. Her mother stated, however, that for the past four years she had been very "nervous."

The family history did not conclusively indicate any specific taint.

Dr. McCall Anderson mentioned a case which he had seen about a week previously, where a patch of considerable size was observed on the side of the neck. He thought that *Dr. Middleton's* case was in every respect a typical one of the affection.

Dr. J. Lindsay Steven also referred to a case where considerable deformity had occurred in the lower extremities, ulceration having followed in several of the patches.

II.—A CASE OF MEDIASTINAL TUMOUR.

BY SAMSON GEMMELL, M.D.

A. F., aged 60, a labourer, was admitted to Glasgow Royal Infirmary on 23rd September, 1890, complaining of cough and spit, shortness of breath, and a choking sensation in the throat. The cough has been present more or less for many years, but the more urgent symptoms were only of 6 weeks' duration. He could assign no special cause for them, but thought they might be due to exposure, as for a week prior to their onset he had been engaged cleaning and painting one of the river steamers, and had on sundry occasions got himself very wet. He always considered himself a healthy man, and was temperate in his habits. He is described on admission as

"presenting a flushed and bloated appearance, with considerable œdema about the lower eyelids." The temperature was normal; the pulse 82, regular and of good quality; the respirations 18, noisy and wheezing. No œdema was present in the legs or feet, and there was no ascites. Examination of his chest revealed a prolonged and somewhat feeble R.M., and in the lower part of the chest expiration is noted as being accompanied by snoring râles, which at the extreme base were associated with mucous râles. The abdominal organs were healthy, and the urine non-albuminous.

The patient was admitted while I was on holiday, and on my return to duty was introduced to me as a case of chronic bronchitis. It was quite evident, however, that another construction was to be put upon it, and on the 10th October I embodied my view of the case in the following note:—"The whole progress of this case since admission has been strongly suggestive of intra-thoracic tumour, of what nature is as yet undetermined, although the occurrence of a circumscribed area of dulness in the region of the *manubrium sterni*, with a highly musical and deep toned quality of the second sound in this situation, and a difference in the force and rhythm of the radial pulses, the left being much weaker than the right and somewhat delayed, are strongly suggestive of aneurism, although there is no pulsation perceptible over the dull area. The face, neck, upper part of the chest, and arms are markedly œdematous; while the abdomen and lower extremities, although he has been in the sitting posture all night, present almost no trace of œdema. The urine is non-albuminous, and the temperature strictly normal. The veins in the neck are greatly distended, but so far as palpation can be pursued, no enlarged glands are found above the clavicle, such as might be present in malignant disease within the thorax; and the trachea, which is strictly in the middle line, is normal in position, and there is no pulsation in the jugular fossa. The face is much congested, the mucous membrane of the lips livid, and respiration, though it cannot be said to be very difficult, is accompanied by distinct stertor, both expiratory and inspiratory. The voice is somewhat hoarse, but the cough has no brassy character. Examination of the larynx reveals the fact that the mucous membrane of the pharynx and larynx participates in the œdema. The entrance to the glottis is narrowed by lateral compression of the epiglottis, due to the surrounding œdema; but the epiglottis itself is not very œdematous. Beyond the narrow chink the cords are plainly visible. Their movements are perfectly normal; and, except for a slight linear

injection, their general appearance is healthy. Several of the rings of the trachea are seen beyond the cords, and there appears to be no compression in that region.

"There is no complaint of pain, and, indeed, there has been none during the course of the illness; nor have there been any disordered sensations such as might be attributable to pressure on nerves."

He grew rapidly worse, the obstruction to the venous circulation soon giving rise to serious cerebral disturbance. He became first delirious and then comatose, and died on 14th October, 1890.

DR. JOHN LINDSAY STEVEN then demonstrated the specimen, which he had carefully dissected and mounted for preservation in the Royal Infirmary Museum. He also showed microscopic sections of the tumour. The growth was situated in the anterior and middle mediastinum, toward the right of the middle line, and projecting upwards into the root of the neck. The mass completely surrounded the vena cava superior, as well as seriously involving the other great venous trunks in that region. A section had been made into the tumour to show nodular projections of the new tissue into the lumen of the superior cava. It had not involved the pericardium to any extent, and there was no pericarditis. The tumour was unusually limited and localised in extent, and, although presenting to the naked eye all the features of a cancerous growth, it was found on microscopic examination to be a lympho-sarcoma.

Dr. McCall Anderson said one of the chief points of interest in connection with this class of cases was the question of diagnosis. It was frequently one between tumour and aneurism. He believed one distinguishing feature was pressure upon the veins. This was rarely observed in the case of aneurisms.

Dr. Finlayson alluded to the case of a lady aged 40 who presented distinct signs of a mediastinal tumour, and in whom the *post-mortem* had been made by Dr. J. Lindsay Steven. One point of interest about this case was the marked swelling of the left arm, presenting an appearance much like that of phlegmasia dolens. Some short time before death this entirely disappeared. At the *post-mortem* no explanation could be found for this remarkable feature.

Dr. Coats said he was interested in this class of cases. He had had the opportunity of seeing several. The point of interest to him was the seat of origin of these growths; did

they arise from the lymphatic glands? had they any connection with the thymus? He had for some time thought of their possible connection with this latter. He took exception to the term lympho-sarcoma from the fact that it might be construed either as a sarcoma growing in a lymphatic gland, or a sarcoma which in its growth resembled a lymphatic gland. In Dr. Gemmell's case he noticed that in the sections under the microscope, there were many cells which had a tendency to be spindle-shaped. He knew Dr. Steven had given particular attention to this class of cases and he would like to hear his opinion upon them.

Dr. J. Lindsay Steven, in reply, said he felt the force of Dr. Coats' remarks with regard to the nature and origin of this tumour. It was very difficult on the spur of the moment to enter into detail, and express briefly his opinions of the questions raised by Dr. Coats. He believed, however, that these tumours did very frequently arise in lymphatic glands, and in the majority of cases they resembled much the structure of lymphatic glands. For this reason he thought the term lympho-sarcoma a suitable one. He had carefully examined the specimens in the Royal Infirmary Museum, and in one or two he had found distinct lymphatic glands, with their black pigment within, surrounded by the tumour tissue.

III.—THREE CASES OF PSEUDO-HYPERTROPHIC PARALYSIS IN BROTHERS, WITH AN INTERESTING FAMILY HISTORY.

By R. BARCLAY NESS, M.A., M.B., C.M.

The following are a few brief notes of three cases of pseudo-hypertrophic paralysis which affected three out of a family of four sons. Photographs illustrative of the cases were shown at the meeting, and the notes are now published with permission of Dr. Samson Gemmell, under whose care in the Royal Hospital for Sick Children two of the cases were. The third, who was the eldest, was only seen a short time and photographed, so as to complete the series. The fourth member of the family, who is not affected with the disease, is 16 years of age. He is strong, and able to attend his work as a miner at the coal pits.

The three affected are—(1) Robert P., aged 18 years; (2) James P., aged 12 years; (3) Andrew P., aged 8 years. These all showed indications of the disease—beginning about the same age—when between two and three years old. They therefore form an interesting series of cases, in which are well marked the characteristic features of the ailment in its different stages.

CASE I (A and B).—Andrew P., aged 8 years, is the youngest of the three brothers. When he was between two and three years of age, his manner of walk, and the difficulty he had in rising from the ground, attracted his parents' attention, and they soon became convinced that the disease had affected a third of their family.

At present the boy looks healthy and well nourished, but the disease is well marked by the attitude in which he stands with his legs apart, the lordosis of the spine and prominent abdomen, the peculiar gait, the very great difficulty he has in going upstairs and rising from the ground, and, lastly, by the enlargement of such muscles as the deltoid, the infraspinatus, and those of the calves of the legs. Some of these characteristic points will be seen in the accompanying photographs.

Within the last two or three years the symptoms have become gradually more pronounced, but the intelligence of the boy remains perfectly good.

CASE II (A and B).—In the case of James P., 12 years of age, the disease is more advanced. The power of locomotion has entirely gone, and he cannot stand even with the help of some support. He, however, can sit up in bed, and is able to use his arms and hands freely. He has even been taught to knit stockings.

There is not much wasting of the muscles, those of the calves and shoulders being still enlarged and firm. Loss of power, however, exists not only in the muscles of the legs but also in those of the back. This has resulted, as regards the spinal muscles, in the disappearance of the lordosis—a feature well marked in the youngest boy mentioned above—while instead a curvature of the spine with the convexity outwards (cystosis) is present.

The boy is quite contented, and also intelligent, but, being unable to attend school, he has had little or no education.

CASE III (A and B).—Robert P., aged 18 years, is the eldest, and in him the disease is still more advanced, but even here there is not the marked emaciation one would have expected. What emaciation there is, is most marked in the arms, especially below the insertion of the deltoid muscles. The calves of the legs are still of fair size. He is much more helpless than his brother James, but can, when placed on a stool or chair, sit upright without any assistance. The posterior curvature of the spine, instead of the lordosis, is well marked in this case also, causing the formation of a deep furrow in the anterior abdominal wall, running transversely,

about the level of the umbilicus. In this case, too, there is a well marked talipes equinus, due to the contraction of the muscles of the calves.

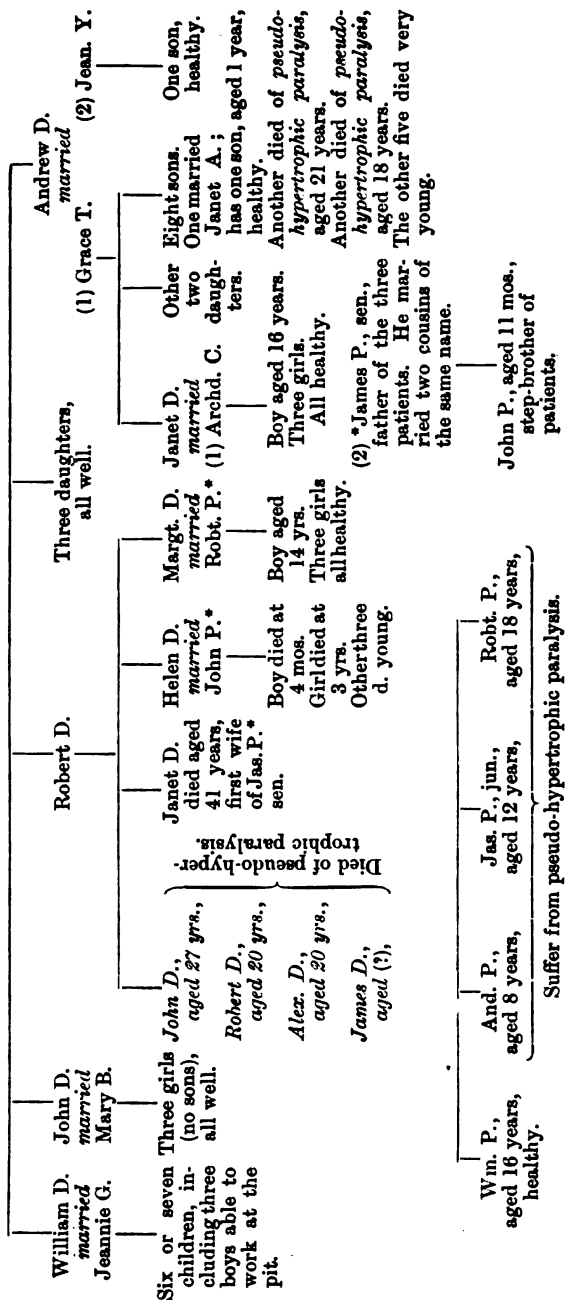
This lad still retains his intelligence, and although he is very quiet and reserved, there is no real mental defect.

Family History.—The most interesting feature about these three cases is the family history. The father's name is James P., the mother's maiden name is Janet D., who died, at the age of 41 years, of cardiac dropsy. She had two sisters and four brothers. Her two sisters married brothers of her husband, so that the three sisters married brothers. Each of these two sisters had a family of boys and girls, none of whom was affected with pseudo-hypertrophic paralysis. The four brothers, maternal uncles of the patients, died of the disease, two at the age of 20 years and one at the age of 27 years. The age at which the fourth died is unknown. The mother, again, had eleven cousins all belonging to the same family, and having the same name of D. This family consisted of eight sons and three daughters. Of the eight sons two died of pseudo-hypertrophic paralysis at the ages of 18 and 21 years. Another, who is quite well, is married, lives in America, and has a son one year old. The other five sons died very young, but with no signs of the disease. Of the three daughters one was called Janet D. She married, and has one boy aged 16 years and three girls all well. Her husband died, and she married lately James P., the father of the patients. This man, therefore, married a cousin of his first wife, and of the same name. She is now the step-mother of the three patients. By this last marriage there is a boy aged 11 months, at present quite well.

There are, therefore, in this record no less than nine male persons who have been affected with pseudo-hypertrophic paralysis, while there is no history of any of the females being affected. It is, however, clear that the transmission is through the female, because four brothers and two cousins of the mother died of the ailment. We cannot carry this idea of transmission any further back in the family history, because the disease, as far as is known, is confined to the family of D. The transmission, therefore, must be through the maternal grandfather and granduncle, unless it be that these two men married women in both of whose relations the disease had shown itself—a fact which is extremely unlikely.

The family connection will be more easily made out by a reference to the tabular form on the following page.

TABLE OF FAMILY CONNECTION REFERRED TO IN THE NOTES.



* James P., sen., John P., and Robert P., are three brothers who married sisters. James P., sen., married twice, the second wife being a cousin of his first wife, and having the same name. The three brothers had eight sisters, all healthy.

ABSTRACTS FROM CURRENT MEDICAL LITERATURE.

MATERIA MEDICA AND THERAPEUTICS.

By C. O. HAWTHORNE, M.B., C.M.

The Addition to the British Pharmacopœia.—A period of five years having elapsed since the publication of the last edition of the *Pharmacopœia*, the General Medical Council has now issued an addendum. This has been prepared under the supervision of the Pharmacopœia Committee, the chairman of which is Dr. Quain. Acknowledgment is made of important aid which has been rendered to the Committee in the selection of the additions by the following, amongst other, medical authorities—the Universities of Aberdeen, Edinburgh, and St. Andrews; the Royal Colleges of Edinburgh, and the Faculty of Physicians and Surgeons of Glasgow.

At the request of the Medical Council, the Pharmaceutical Society appointed a committee to assist in defining and preparing the several additions to be made, and in the report of the Pharmacopœia Committee the valuable services rendered by the distinguished pharmacists selected for this work are cordially acknowledged. The actual editing of the addendum has been undertaken by Professor Attfield, the annual reporter on the *British Pharmacopœia*, and it is to the same gentleman the credit of combining representatives of the art of pharmacy with the Pharmacopœia Committee in the preparation of the addendum, is due. This latter step has given much satisfaction to the Pharmaceutical Society, which has long urged its adoption, and its complete justification is afforded by the report of the Pharmacopœia Committee, which says that such "combination cannot but be productive of future, as well as immediate, benefit both to medicine and to pharmacy."

During the five years which have elapsed since the issue of the last edition of the *British Pharmacopœia* such a large number of new remedies have been submitted to the profession that the selection of those worthy of official recognition must have been a task of considerable difficulty. No doubt criticism will be freely applied to the work of the committee, but on the whole, we think the result will give general satisfaction.

Amongst the new drugs introduced are: Sulphonal, Phenacetin, Paraldehyde, Picrotoxin, Oil of Cade, Hydrobromate of Homatropine, Eucalyptus Gum, Acetanilide, Gluside, and Phenazone—the last three being the official names for Antifebrin, Saccharin, and Antipyrine respectively. The last name is a registered trade-mark in the United Kingdom, and hence when used in prescriptions must be dispensed with the drug supplied by the firm holding the patent. But as the same substance can be manufactured by other methods, the use of the term Phenazone leaves it optional on the part of the pharmacist to employ the product of any other manufacturer, so long of course, as the substance he uses satisfies the official description and tests. The same remarks apply to "Lanoline" which is also a registered trade-mark, and which appears in the "additions" as Hydrous Wool Fat (*Adeps Lanae Hydrous*). Wool Fat is described as "the purified cholestrin-fat of sheep's wool," and the Hydrous variety is to be made from this by the addition of 30 per cent of water. The propriety of the introduction of *Strophanthus* (the mature ripe seeds of *Strophanthus hispidus* freed from the awns) will be universally allowed, as will also the recognition of an official tincture (1 in 20). A dry extract of *Euonymus*, made from the bark, and commonly known as "Euonymin," will also be welcomed, and the same recognition will be extended to the bark and leaves of the witch hazel *Hamamelis Virginica*. From the former there is to be prepared a tincture (1 in 10), and from the latter a

liquid extract (1 in 1) and this, mixed with simple ointment, in the proportion of 1 to 9, forms a new official unguent. It may be doubted whether every one was prepared to meet with Hydrastic Rhizoma (golden seal) amongst the new official remedies; but it, with a liquid extract and tincture, has received the authoritative stamp. Stramonium leaves, which were omitted from the edition of 1885, are now restored to the Pharmacopœia. Gelatine is the only other new drug introduced, and it is raised to official rank, so that it may be used in making glycerine suppositories which are to contain 70 per cent by weight of glycerine. A formula for the preparation of Fehling's solution is introduced into the appendix.

The remaining "additions" consist of chemical and galenical preparations of substances already official. These include the Benzoate and Nitrite of Sodium, and formulas for Effervescent Phosphate of Sodium, Effervescent Sulphate of Magnesium, and Seidlitz Powder. The new galenical preparations, besides those referred to above, are: Solutions of Hydrochlorate of Cocaine, 10 per cent, Sulphate of Morphine, 1 per cent, and Trinitrin (pure nitroglycerine dissolved in rectified spirit, 1 per cent); Syrup of Ferrous Chloride, and Pilula Ferri, the latter representing Bland's pill, and each 5-grain pill to contain about 1 grain of carbonate of iron; Vinegar of Ipecacuanha (made with dilute acetic acid, 1 in 20); Menthol Plaster; Castor Oil Mixture, in which the oil is emulsified with the aid of solution of potash and syrup, the mixture being flavoured with oils of lemon and cloves, whilst orange flower water is used as a vehicle (2 ounces of the mixture contains six drachms of castor oil); Sulphur Lozenges, each containing 5 grains of precipitated sulphur, and 1 grain of acid tartrate of potassium; and Ointment of Hemlock, made by adding hydrous wool fat and a little boric acid to evaporated hemlock juice. The "additions" is published for the Medical Council by Messrs. Spottiswoode & Co.

Calomel in Enteric Fever.—Dr. Broadbent, in an address delivered to the medical students of the Leeds School, quotes a case of enteric fever (fourteenth day) in which he regarded the dangerous condition of the patient as due to the absorption of ptomaines from the alimentary canal, and in which a dose of 3 grains of calomel produced most marked benefit.

The bowels were constipated, vomiting of small quantities of greenish fluid was constant, and there was great prostration, the extremities being cold and clammy, the pulse very frequent and weak, and the patient unable to answer questions put to him. There was no abdominal distention or tenderness. The day after the first dose of calomel the patient was relieved, and desired to know when he could get up. A second dose of calomel, followed by grey powder was given, and the case assumed a mild character and ended in recovery.—(*Brit. Med. Journ.*, 4th October, 1890.)

Faradism in Jaundice.—Kraus, in the *Archiv. f. Kinderk.*, speaks highly of the value of faradic electricity in catarrhal jaundice. He reports 17 cases, each of which was cured by five or six applications. One electrode was placed at the border of the liver in the neighbourhood of the gall-bladder; the other in the same horizontal plane to the right of the vertebræ. The application produces contraction of the abdominal muscles, and doubtless also increased peristalsis in the gall-bladder.—(*Practitioner*, November, 1890.)

Antipyrin as a Hæmostatic.—Saint-Germain (*Rev. Mensuelle d. Mal. d. l'Enfance*, No. 8, 1889), having learned from Hénocque that antipyrin is a hæmostatic, had an opportunity of testing its value in that respect in a case of tonsillotomy, and was so impressed by its action in that and some other cases that he writes strongly in its praise. It may be used in powder or in 20 per cent solution.

Hénocque has made experiments on animals which lead him to believe that antipyrin is more efficient and quicker in its action than any previously known hæmostatic.—(*Centr. bl. f. Chir.*, 15th February, 1890.)—D. M'P.

Memoranda.—In the *Brit. Med. Journ.* for 25th October, 1890, Dr. Knaggs reports a case of fatal poisoning by sulphonal; the patient had swallowed more than an ounce of the drug. In the same *Journal* Dr. Ryan-Tennison gives a favourable account of the administration of antipyrin as an antigalactagogue.

The following is recommended (in the *Répertoire de Pharmacie*) as an excellent local application for the relief of pain in acute rheumatism:—Dissolve 4 parts of salol in 4 parts of ether, and then add 30 parts of collodion.

Merck's Bulletin gives the following formulas:—

FOR DIFFICULT TEETHING.

Hydrochlorate of cocaine,	. . . . .	1½ grs.
Syrup,	. . . . .	2 fl. drachms.
Tinct. of crocus,	. . . . .	20 drops.

Rub frequently over the painful gums.

FOR FISSURED TONGUE.

Papayotin,	. . . . .	1 part.
Vaseline,	. . . . .	10 parts.

Paint on the tongue several times daily.

NERVOUS DISEASES AND INSANITY.

By DR. R. S. STEWART.

Accidents Occurring from the Employment of Diving Apparatus. By Catsaras (*Archives de Neurologie*, September, 1888, to January, 1890).—This long article embodies the results of Professor Catsaras' observations during four years of the effects of the apparatus used by the sponge-fishers in the *Ægean Archipelago*. In speaking of the history of the subject, it is mentioned that though deaths are not so numerous since the introduction of the apparatus in 1866, there still never passes a year without at least a score of fatalities.

From a clinical point of view, the accidents which occur are divided into two categories, the first comprising those which affect the nervous system, the second, much less numerous, those which have their site in other organs or tissues. The first class is divided into (a) spinal, (b) cerebral, and (c) cerebro-spinal forms. Dealing with the first the writer distinguishes several varieties, each characterised by special clinical features. Of these, the most frequent is that which he designates the lateral central spinal form. The initiatory symptoms manifested by the divers, on their return from the depths of the sea, occur immediately on raising the head-piece, or after a brief interval. These comprise loss of consciousness, vertigo, aphasia, blindness, noises in the ears, pain and gaseous distension of the stomach, and articular and muscular pains. Then after an interval of varying length paraplegia supervenes, the other symptoms disappearing, and ultimately the affection takes on the characteristics of spastic paralysis of the lower extremities, associated, however, with various sensory, vaso-motor, recto-vesical, and genital symptoms. Detailed descriptions are given of thirteen cases of this type.

The second variety of the spinal form, which is designated the postero-lateral central form, and of which six cases are described, is characterised by the superaddition, during the confirmed stage, of various tabetic symptoms, fulgurant and girdle pains, impaired muscular sense, gastric crises, and anæsthesia.

The third variety, the posterior central, is much less common than the two already described, only three cases having been observed. It, too, is charac-

terised at the onset by paraplegia, but this disappears, and is replaced by a condition presenting all the usual symptoms of tabes.

In the fourth, or posterior spinal, the spinal symptoms are not, as in foregoing varieties, preceded by any cephalic symptoms; the clinical aspect is represented only by the spinal symptom, atology, which indicates a lesion of the posterior regions of the dorso-lumbar cord.

The fifth, or unilateral form, is characterised by paralysis of one of the lower limbs, of the spastic type, associated with alteration of sensibility.

The sixth, designated the transitory paralytic spinal form, is of frequent occurrence, and differs from the others in that the paralysis is fugitive, and lasts only for a few minutes or hours, or, at the most, some days.

The cerebral accidents assume various forms, characterised by aphasia, blindness, noises in the ears or deafness, epileptiform seizures, paralysis, either hemiplegic or partial in type, mental affections, vertigo, or loss of consciousness.

Of the non-nervous accidents, the following have been observed—pain and enlargement of the liver, generalised subcutaneous emphysema, and hæmorrhage into the thyroid.

As to the pathogenesis of the conditions dealt with in this article, the writer comes to the conclusion that they originate from the formation of gaseous globules in the blood, and that "in the genesis of the accidents occurring among those who work in compressed air, the oxygen is of very little account, the carbonic acid is of no account whatever, and that it is the nitrogen which is the essential and principal pathogenetic agent."

Acute Dementia: Recovery after Treatment by Heat and Cold to the Head, Electricity, General Massage. By Alexander Robertson (*Journal of Mental Science*, January, 1891).—The case here described is that of a girl of 24, in whom hallucinations of sight and hearing and headaches became replaced by advancing stupor, emaciation, and weakness. No distinct improvement following general stimulating and tonic treatment, the application of heat, and afterwards of cold to the head, by means of the cap, was followed in 19 days by distinct improvement, and the cure was completed by electricity to the head, and general massage.

On Present Physiological Theories of Epilepsy. By Jules Christian (*Journal of Mental Science*) January, 1891).—The chief objection which Dr. Christian has to the theories at present held, is that of seeing in epilepsy only the convulsion. Convulsion, he says, is not the pathognomic sign of epilepsy, and is absent in a great number of cases. The essential sign of the disease is loss of consciousness, sudden and absolute, which accompanies all epileptic manifestations, and without which there is no epilepsy. On this account he localises epilepsy in the anterior part of the cerebral hemispheres, and according as the epileptic explosion remains in this region, or as it extends to neighbouring regions, we have one or other of the various types of epilepsy.

DISEASES OF THE EYE.

By FREELAND FERGUS, M.B.

Operative Treatment of Myopia.—Fukala has lately strongly cultivated the removal of the lens in high myopia. This he does by repeated needling. In very many of his cases he finds that the V.A. is much better after such treatment, when any remaining ametropia is corrected, than it was before, even on correction of the myopia. Of course, such treatment is only suitable for young subjects, and ought not to be attempted after 25 years of age.

Embolism of the Retinal Artery with Normal Vision.—Mittendorf, of New York, reports a case in which there was found an embolism of the upper branch of the artery, but in which the vision for the macula was $\frac{3}{8}$. The part of the visual field supplied by the affected branch of the artery was, as might be expected, absolutely blind. A still more interesting case is reported by Wadsworth, of Boston. To the ophthalmoscope the fundus showed all the appearance of embolism or thrombosis of the central artery, except that there was no oedema of the macula. Vision for the macula was $\frac{1}{4}$, or rather more than normal. He explains the circumstance by saying that there was an unusually large cilio-retinal artery.

Muscular Asthenopia.—We have in these jottings, on previous occasions, given short epitomes of Stevens' very interesting papers on muscular asthenopia. In a recent paper, St. John Rooza calls the whole of Stevens' doctrine into dispute, holding that there is very rarely indeed any case of pure muscular asthenopia.

He begins by pointing out that when the condition known as asthenopia muscularis was first discovered and elaborately described by Græfe and others, full weight was not given to refractive asthenopia, for hypermetropia and astigmatism had newly been discovered, and were not known to be so frequent as they are now universally admitted to be. Before Donders' time, Bonnet and Petrequin supposed that asthenopia was caused by the muscles of the eyeball. Rooza says, Donders conclusively observed that a large number of the cases of asthenopia were due to hypermetropia, but that he himself had no idea of the importance of astigmatism, and that Græfe had still less.

The author's view is well expressed in a single sentence. "It is my belief that muscular asthenopia, as understood by Græfe, has no such importance as he and subsequent writers have attributed to it." He is strongly of opinion that insufficiency of the recti muscles is a consequence of the same conditions that produce asthenopia—viz., myopia, hypermetropia, and astigmatism. As a natural result of these views, Rooza has given up entirely the use of prisms in his clinic. He mentions also that so great an authority as Javal has done the same, ever since he has been able by his ophthalmometer to measure with tolerable exactness the amount of corneal error.

Such are his views, and they are certainly entitled to the most serious consideration. Still we are inclined to ask why muscular irregularities are not more frequent when there is considerable and uncorrected ametropia. We would also like a fuller explanation of cases in which, after glasses fully correcting the ametropia had been worn for a lengthened period, complete relief was only found when the same glasses were prescribed in combination with prisms. Some such cases are mentioned in a recently published paper by Landolt, who has certainly devoted considerable study to the movements of the muscles of the eyeballs. He has been induced to write this paper by having grave doubt as to the existence of muscular insufficiency expressed by certain authorities of the first rank at the Berlin Congress. We well remember his important contribution to the subject published in 1885, in which he insists that for comfort there ought to be at least three metric angles in reserve.

The present paper is chiefly occupied by the description of certain cases in which relief has been found only when the muscular arrangements of the eyes have been properly attended to. We cite a few of them:—

A young girl of 18, with $p = .5 D$, no astigmatism, perfect acuity of vision, no astigmatism but only 8 *m.a.* of convergence and 2.25 *m.a.* of divergence. Residence in the country, rest to the eyes, and hygienic treatment brought the convergence to 12 *m.a.* The asthenopia from which she previously suffered disappeared, when the want of convergence was rectified.

Other two cases specially interesting are put on record in which there was undoubtedly astigmatism, but which was thoroughly corrected. This, however, even with the lapse of time, gave no relief to the asthenopia. In one of these cases there was only .75 *m.a.* of convergence.

Certain cases, in which operation for the loss of convergence has cured the

asthenopia, are also mentioned.. We mention only one. A patient, aged 15, myopia in left=10D; in right=9D, with convergence=2.75 m.a., suffered from severe asthenopia with a very troublesome crossed diplopia. A tenotomy was made of one of the external recti muscles, and proper exercises prescribed, and the asthenopia vanished, the amplitude of convergence being 18.5 m.a.

As a rule, advancement is to be preferred to tenotomy. Landolt says that in his hand this method has never given an even correction. It is an operation which the writer of these notes has done a considerable number of times, and with the best results.

DISEASES OF THE EAR.

BY DR. WALKER DOWNIE.

Intra-cranial Complications of Chronic Otitis Media.—Dr. Patteson, of Dublin, makes a contribution to the study of such conditions in the form of a paper in the *Dublin Journal of Medical Science* for July, 1890. The patient was a female, aged 19, who had been the subject of otorrhœa since having measles at the age of three. The discharge was accompanied by deafness which had gradually been increasing; and latterly she had suffered severe pain in left ear and over the side of the head, and this associated with dulness in hearing. These symptoms increasing, trephining of mastoid was resorted to. At the operation, in place of opening the mastoid antrum the dura mater was exposed, "just behind the genu of the lateral sinus." Thrombosis of the lateral sinus resulted, an extra-dural abscess formed, and this was followed by pyæmia. The skull was then trephined a second time and the temporal lobe explored. Death followed from embolic pneumonia.

Dr. Patteson thinks that in every case of otitis media which does not yield to the careful use of the recognised forms of treatment within a year, the mastoid antrum should be freely opened, thereby establishing means of free irrigation and drainage.

Affections of the Ear in Tabes Dorsalis.—Affections of the auditory nerves are very much more rare in tabes dorsalis than affections of the optic nerve. It may be on this account, and also as aural implications are not symptomatic of the presence of tabes, that so little attention has been paid to the affections of the ear in this disease. Quite recently, however, several papers on this subject have appeared.

Dr. Alessandro Marina, of Trieste, examined the ear in forty tabetic patients, in twenty-nine of whom there was some auditory lesion. Subjective noises occurred in but few of the cases, and in no case did he find Ménière's symptoms. He considered that in those cases where there was aural affection, not only the terminal apparatus but the auditory nerve itself was affected, and the change was of a more or less distinct anatomical character.—(*Archiv. für Ohrenheilkunde*, 1890.)

Dr. Eugene Morpurgo of Trieste, publishes the results of his observations made on 53 cases of tabes—42 men and 11 women. Ten had normal hearing, and forty-three were more or less deaf. Of these latter, distinct change in structure was detected by ocular examination in fifteen cases, while twenty-eight appeared on examination with speculum to be normal. Vertigo was present in two cases. As a result of careful investigation, it was evident that in the majority of the remaining cases there was disease of the perceptive apparatus—the auditory nerve and its terminals.—(*Archiv. für Ohrenheilkunde*, 1890.)

Dr. Leopold Treitel, of Berlin, examined twenty such cases. All these cases as described by him were very carefully tested, and he found disturbances in hearing in five cases—in three of these however, the disturbance was

so inconsiderable as to be looked upon as an accidental complication—and subjective noises were heard in one case only. In the two cases in which deafness was well-marked, the nerve was undoubtedly implicated, but he also considered that the sound-conducting, as well as the sound-perceiving, apparatus was diseased. He further considers that the sclerotic changes, or better, the “trophic disturbances” in the mucous membrane of the tympanic cavity were caused by anæsthesia of the fifth nerve, as there was marked anæsthesia of the membrana tympani and the mucous lining of the cavity, present.—(*Archives of Otolaryngology*, October, 1890.)

Permanently Good Results of Excision of the Membrana Tympani and Malleus in a Case of Chronic Aural Vertigo.—An account of this case was given by Dr. C. H. Burnett, before the American Otological Society. The case was one of aural vertigo, caused by adhesions of the membrana tympani and malleus to the inner wall of the tympanum, the result of chronic middle-ear catarrh. Various forms of treatment recommended for the relief of the tinnitus and vertigo were employed without benefit; and as the adhesions of the membrana tympani and malleus, with consequent retraction of the ossicles, were deemed the cause of the tinnitus and vertigo, excision of the adherent parts was recommended and performed. Immediate relief resulted from the operation, and there has been no return of the annoying symptoms during the two and a half years since operation. This case illustrates the mechanical origin, as opposed to the neuropathic origin, of some cases of so-called Ménière's disease.

Excision of the membrane and malleus, in a case of chronic suppuration of the attic of the tympanum, of several years' duration, and which resisted long-continued antiseptic treatment, was also performed by Dr. Burnett, with relief from discharge, and increase in hearing power.—(*The International Journal of the Medical Sciences*, November, 1890.)

The Injection of Fluid into the Middle-Ear Through the Eustachian Tube in Cases of Purulent Otitis Media. By Adolf Bronner, M.D.—In place of removing purulent discharge in cases of chronic otitis media by the use of the syringe applied through the external meatus, Dr. Bronner, in common with other aurists, recommends the use of fluids applied through the Eustachian tube. Lately, in place of employing the syphon or syringe, along with the Eustachian catheter for this purpose, he devised and used an elaborate injector, by means of which the fluid enters the tympanum in the form of a fine spray. The use of this obviates the risk of giddiness, and it also prevents the discomfort of the older method where the excess of fluid trickles down the patient's throat. The apparatus is figured and described.—(*Provincial Medical Journal*, January, 1891.)

Reduplications of Mucous Membrane in the Normal Tympanic Cavity. By Clarence J. Blake, M.D., Boston.—In this paper Dr. Blake describes these folds, and emphasises their clinical importance. These folds are formed in the middle-ear of the human subject, in a more or less pronounced form, and quite apart from any pathological change, in something like 70 per cent. These reduplications are divided into three forms, according to their location. The horizontal reduplication, which from its position interferes with drainage of the tympanic attic; vertical or irregularly disposed folds, about the stapes and round window, and which interfere with the movements of the stapes and covering of the foramen rotundum; and striae or reduplications in the neighbourhood of the mastoid antrum. By these reduplications the secreting and vascular surface of the tympanic cavity is greatly increased—may be readily doubled—and thus the liability to acute congestions of the middle-ear from, it may be, slight exposures, is greatly increased. Mechanically, these reduplications may interfere seriously with hearing, and also with free drainage of the tympanum during a suppurative catarrh.—(*Archives of Otolaryngology*, October, 1890.)

The following interesting papers are contained in the *Archives of Otolaryngology* for October, 1890:—

"Observations on the Topography of the Normal Human Tympanum," by William S. Bryant, M.D., Boston.

"Cholesteatoma, Perforation of Shrapnell's Membrane, and Occlusion of the Tubes," by Dr. F. Bezold, Munich.

"Changes in the Nasal Mucous Membrane in a case of Leukæmia," by Hermann Suchanek, Zurich.

"Anatomical Description of the Left Ear of a Man who died of Meningitis," by Dr. H. Steinbruegge, Giessen.

"Words as Tests of the Hearing Power and their Differential Diagnostic Value," by Dr. Oskar Wolf, Frankfort-on-the-Main.

Books, Pamphlets, &c., Received.

Illustrated Lectures on Nursing and Hygiene, by R. Lawton Roberts, M.D. With Illustrations. London: H. K. Lewis. 1890.

Antiseptics in Obstetric Nursing, by John Shaw, M.D. Illustrated by a Chromo-lithograph, four Plates and various Woodcuts. London: H. K. Lewis. 1890.

Manual of Bacteriology, by Edgar M. Crookshank, M.B. Third Edition, revised and considerably enlarged. London: H. K. Lewis. 1890.

A Text Book of Chemical Physiology and Pathology, by W. D. Halliburton, M.D. With 104 Illustrations. London: Longmans, Green & Co. 1891.

Hygiene and Public Health, by B. Arthur Whitelegge, M.D. With 23 Illustrations. London: Cassell & Company. 1890.

Railway Injuries, with special reference to those of the Back and Nervous System, by Herbert W. Page, M.A., M.C. London: Charles Griffin & Co. 1891.

Pocket Medical Lexicon, by John M. Keating and Henry Hamilton, with Addenda. London: H. K. Lewis. 1891.

The Urine, in Health and Disease, by H. Aubrey Husband, M.B., C.M. Second Edition. Edinburgh: E. & S. Livingstone. 1891.

Catechism Series: *Materia Medica*. Part I. Edinburgh: E. & S. Livingstone. 1891.

The Daughter, her Health, Education, and Wedlock: Homely Suggestions for Mothers and Daughters, by Wm. M. Capp, M.D. Philadelphia and London: F. A. Davis. 1891.

Aphorisms in Applied Anatomy, by Thos. Cook, B.A., B.Sc. London: Longmans, Green & Co. 1891.

Index-catalogue of the Library of the Surgeon-General's Office, United States Army. Authors and Subjects. Vol. XI. Phædronus-Régent. Washington Government Printing Office. 1890.

Studies of Old Case Books, by Sir James Paget, Bart. London: Longmans, Green & Co. 1891.

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ORIGINAL ARTICLES.

ON THE TRAINING OF A MEDICAL MAN.

Being the Introductory Address delivered at the opening of the Winter Session of St. Mungo's College, Glasgow, 22nd October, 1890.

By HENRY E. CLARK,

Dean of the Medical Faculty and Professor of Anatomy in the College.

"BUT here the main skill and groundwork will be to temper them such lectures and explanations upon every opportunity as may lead and draw them in willing obedience, inflamed with the study of learning and the admiration of virtue, stirred up with high hopes of living to be brave men and worthy patriots, dear to God and famous to all ages."

—JOHN MILTON, "Letter on Education."

It is now eleven years since it was my privilege to deliver the introductory address at the opening of the Winter Session of the Royal Infirmary School of Medicine. I then took as my theme "Medical Education and Qualification," and if I now return to the same subject, it may perchance seem as if one idea, and one alone possess me. The action of the General Medical Council in proposing the extension of the curriculum to five years, gives, however, much food for reflection, and the severe strictures on our present method of teaching which formed so outstanding a feature of Mr. Lawson Tait's address in Surgery at the Birmingham meeting of the British Medical Association, as well as the address by the president, Dr.

Wade, necessitate some reply on the part of those engaged in the work of teaching students, and of those on whom is imposed the duty of guarding the portals of the profession.

That we have not reached ideal perfection in our methods of training and examining those who enter the medical profession, is a truism which we need take no pains to discuss and make no attempt to refute. We claim to be only mortal, and subject to such conditions and limitations as that mortality involves; and, while contending educational theorists fight over the relative advantages of scientific and practical training, must be content to fully satisfy neither party, and must be prepared to find our methods criticised and our motives questioned by many who have no practical knowledge of what our teaching is, and very little more of what kind of practitioners of medicine we turn out. Every senior practitioner feels his competence to judge the newly fledged medical man, but his judgment is apt to be very seriously biased, by the fact that he regards himself as the especial embodiment of all medical science, the "perfect flower" of medical training. Hence, knowing nothing of the sphygmograph, the hæmocyto-meter and the ophthalmoscope, he is inclined to look with suspicion on one who is familiar with their use; being ignorant of pathology he scorns a man who makes such fine distinctions as those between a sarcoma and a carcinoma, or even between anæmia and chlorosis. Again, he is given to fancying that he left the school with all the knowledge he now possesses, forgetting all the ripening of experience, and the growth of practical knowledge which years of practice yield; hence his not unnatural surprise at the green and callow youth we now turn out from our schools and colleges. I am far from denying that there is a real danger of our teaching too much science and too little practice, and of our forgetting in the teaching of our science the very practical use to which it is to be put in the after life of the taught; but I contend that the danger has been exaggerated, and that the opposite danger of too great a disregard of science and the grand results we may achieve from it, must not be overlooked. Would purely practical teaching without scientific research have given us the magnificent discoveries of Lister, of Pasteur, or of Koch? Would it have given us the knowledge we now possess (imperfect though it be) of cerebral and spinal physiology and pathology? Among the many benefits I have received from being associated with my colleague, Dr. Macewen, I am especially conscious of this one—that he has taught me that no anatomical detail is small or insignificant, for there is no knowing at what

time it may come to be of essential interest in disease, or in operation for its cure. When he was making a study of knock-knee, I learned how ignorant I was of the lower end of the femur, and now when his attention is fixed on the skull, every point, every ridge, every minute foramen has become interesting. The combination of science and practice—seizing the results of the one to aid, ennoble, and strengthen the other—that is the true ideal teaching we should aim at, and which I make bold to say we *do* aim at. But even here we may be too narrow, and may be too anxious to see the end from the beginning, and may put aside as recondite, abstruse, or unpractical, scientific facts which may prove to our successor to be pregnant with most valuable practical suggestion. No doubt Oko Guericke, who discovered that a globe of sulphur when rubbed in the dark emitted flashes of light, was scoffed at as a trifler, yet his was the germ of the discovery of the electric light, which has already so revolutionised our ideas of lighting, and which is destined, within a few short years, to replace gas almost entirely. Some here present, perhaps, can remember how we sneered and jeered at Lister's devotion to Florence flasks charged with urine, and with necks drawn into fantastic shapes, or plugged with pellets of cotton-wool, yet here we saw the embryo of the germ theory of disease.

But my treatise is not intended to be scientific or philosophical—it is to be a thoroughly practical one—and I pass from these enticing regions of speculation, or of rumination, to try and answer the question, "How can we educate our medical students, so that they may obtain the best scientific and practical training?"

It is our proud boast that we are a thoroughly practical people, with "no humbug about us," and no disproportionate amount of sentiment; yet nothing is more apparent than that the education of our children is governed by fashion, stereotyped by custom, and strangely wanting in adaptation to the end to be attained. While recently taking holiday among the grazing farmers of the Midlands of England, I was amused to find that it was the "proper thing" for the farmer's sons, on reaching a certain age, to go to a grammar school a few miles away, because, it was pointed out to me, if they did not, they would not learn Latin as their fathers had done. I endeavoured to find out if Latin had been of much use to their fathers in the buying and selling of cattle, or in the sowing and reaping of crops, if, in after years the fathers even remembered the Latin name for ox or sheep, or if they could recall the Latin root of any English word; but in neither respect could

I find justification of their faith in the language of Virgil as a necessary part in the education of a farmer. I have no desire to disparage Latin as a basal study, but when the choice lies between a living and a dead language, the former appears to have the strongest claim—for is not a living *dog* better than a dead *lion*? Dr. Wade, in his presidential address, so fully discussed this question that I may well pass it by, with the comment that in my experience few students of merit reach their third year without having reason to regret that Latin was—and German was not—a compulsory subject of the preliminary examination.

The improvement in the elementary education of the country which has followed upon the making it compulsory, has, unfortunately, only very slightly affected the class from which the bulk of our students are drawn. The School Board system was only intended to benefit the artizan and the lower classes, and instead of secondary education improving, it has distinctly retrograded. No private school, unless it be endowed, can compete with schools supported by the rates, earning Government grants, inspected by Government officials, and stimulated by the necessity of showing good results. Hence many such schools have gone to the wall, and many most worthy and excellent dominies have found themselves reduced from affluence to poverty, and driven to the alternative of subsisting on the precarious charity of old pupils, or the support of the parish. Either the Government must place under the control of the Board of Education the existing secondary schools, whether collegiate, grammar schools, or higher class private schools, subjecting them to similar conditions as to inspection, examinations, educational codes, and grants as the primary schools; or the School Boards themselves must supply the want, by setting apart schools where the higher courses of mathematics and languages, and rudimentary courses in science may be taught—sufficient to prepare a youth for at least the entrance examination to the classes for degrees in the faculties of arts, science, medicine, and law. Such schools must be self-supporting as far as the rates are concerned, but I see no objection to their earning the Government grant, and they must certainly be subject to the control and examination of Her Majesty's inspectors of schools. I am aware that, under both the Glasgow and Govan School Boards, such schools do exist, and are doing most excellent work, but they are in large measure doing it covertly, and in the teeth of a large party of popular educationists who seek their suppression. Moreover, as carried on by them, it is not a *system* of secondary educa-

tion, and without that system the teaching is liable to be variable in quality and ineffective in result.

The absence of such a system of secondary education has been most disastrous to our youth, and has rendered the medical preliminary examinations notable for the large percentage of failures, and has caused examiners and examined to look on each other with suspicion, not unmingled with contempt. The new departure in the granting of "leaving certificates" by secondary schools, and the acceptance of these by the General Medical Council as equivalent to a preliminary examination (or part thereof) is the most important step forward which has ever been taken in relation to pre-professional education. I am sanguine enough to look forward to the time when all entrance examinations will be done away with, and the "leaving certificates" will give admittance to all faculties, and to the courses qualifying for all degrees and licences, in arts, law, medicine, and science. Before this desirable consummation is attained, it is essential that there should be something like uniformity in the conditions under which such certificates are granted, and this implies a central regulating and controlling authority. It is also necessary that the higher Board schools should have the power to grant "leaving certificates," for it is an anomaly and a scandal that schools distinguished by the highest and most thorough teaching should not be able to grant certificates, or that such certificates if granted should not be accepted fully and freely. Armed with such certificate as the evidence of a wide and thorough preliminary education, it would not be necessary for a man who had started in business, or in some other profession, but found he had a taste for medical work, or an enthusiastic desire to aid his fellows, to go back to mathematics, Latin, arithmetic, and even English before he could enter on the study of medicine. The "leaving certificates" must, however, evidence a higher knowledge than the bare minimum requirement of our present medical preliminaries, the latter having been made (admittedly) much below what they should be, mainly, I believe, because so many men entering on the study of our profession are separated by an interval of years from their school days.

Enquiries among the teachers and scholars in our higher Board schools have satisfied me that an average boy or girl in such schools should be able easily to pass an examination equal to the present medical preliminary at the age of 15, and that, even with the additional book of Euclid which is to be put on in 1892, a moderately stupid youth should be able to

get through by the age of 16. If this be true, our students ought to be able to commence professional study at a much earlier period than the majority of them at present do. And with this reflection, I leave the question of preliminary education and examination.

The proposal of the General Medical Council that the curriculum shall extend to five years is only a *recommendation* which it lies with the licensing bodies to adopt or reject, as they may think fit. A few years ago, it would have been possible to predicate that all or some of those bodies would reject the proposal, and reply that the time for such change had not yet arrived. Time, however, works wonders, and after an existence of over thirty years the Medical Council has discovered its powers, and has shown in its action in regard to diplomas in public health, that it intends its suggestions should have the force of law, since it can refuse to register all diplomas granted on any other conditions than those on which it has set the seal of its approval. Under these changed circumstances we may assume that the licensing bodies will not stand in the way, and that all who commence study after 1st January, 1892, will require to spend five years (or 4 years and 9 months) from the date of their registration in acquiring professional knowledge, and we are brought face to face with the question, "What is to be done with the extra year, and what changes in our arrangement of classes will be rendered necessary to adapt our teaching to the new conditions?" Many have assumed that the addition of another year to the course implies that a student will be unable to qualify until he is 22 instead of 21, but this is by no means the case, for, as I have already shown, every student should be able to pass the preliminary examination, even with the additional book of Euclid now proposed, by the time he is 16.

It is proposed that mechanics shall no longer be a subject of the preliminary examination, but that the first year's lectures should include a course of elementary physics, as well as a course of elementary biology, which subjects also are to form part of the first or preliminary scientific examination. If a fifth year has been added, the time has been in some measure appropriated by the addition of these courses; it is as if a man should say to you, "I will in my generosity give you twopence if you will hand me back a penny-three-farthings." We may thus assume that the whole of the first year will be taken up with chemistry, biology, elementary physics, and elementary anatomy. In the second year will come advanced anatomy and physiology. In the third year pathology, materia

medica, systematic and clinical surgery. At the end of each of these years, it is proposed there should be an examination in the subjects included in the courses. In the fourth year will come midwifery, medical jurisprudence, medicine, and hospital practice, with clinical instruction. As to the fifth year the Medical Council have clearly indicated what shall be done with that in the following words:—

“That the fifth year should be devoted to clinical work at one or more of such public hospitals, or dispensaries, British or foreign, as may be recognised by any of the medical authorities mentioned in schedule (u) of the Medical Act (1858), provided that of this year, six months may be passed as a pupil to a registered practitioner holding a public appointment, or possessing such opportunities of imparting practical knowledge as shall be satisfactory to the medical authorities.”

We have thus raised anew the oft-debated question of apprenticeship, and are likely in the near future to be deluged with arguments old and new on this hackneyed subject. Certainly we *have* lost something by the decline of the apprenticeship system, and something which we should seek to regain. To learn to wash bottles, to learn to ride and drive, to pull teeth for the village servants, to doctor the dogs of the patients, to dispense the regulation “red mixture” or cough bottle, were certainly not very high attainments, but they had a very direct bearing on the life-work of the man when he should become a fully-fledged practitioner, and without some such experience the M.B., C.M., B.Sc. with Honours may feel himself—and be judged by others to be—the veriest *ignoramus*.

But, if the chief was even an average practitioner he taught much more than these rudiments; he initiated his pupil into the mysteries of book-keeping, he instructed him in the elements of urine-testing, he taught him a fair amount of dispensing, he gave him some hints as to the recognition of the commoner diseases, and, what was even more important, he taught him the wisdom of looking wise and using sage expressions when diagnosis was out of the question and ignorance a thing not to be admitted. When the general practitioner talks of the imperfect training of the present race of qualified assistants, he means simply that they have not been trained in the methods and “dodges” (may I be forgiven the word?) of general practice; but he is all too ready to make wild statements as to the incompetence of the teachers, the crass ignorance of the taught, and the radical stupidity of our whole system of education. It is little short of a burlesque

to instance (as Mr. Lawson Tait does) the man who stated that he held a vaccination certificate, but had never in his life performed vaccination, as a fair sample of the way in which men are being turned out of our schools; the statement may possibly be true, but the man was one who had taken pains to evade teaching, not one who had been taught. Certainly such an abnormal specimen, such an exceptional example must not be taken to prove any rule. Still, while denying the accuracy of the highly coloured pictures of the effects of the modern training in our medical schools, I am free to admit (as I said in an earlier part of this address) that much of our teaching has too little relation to the training for actual practice as physicians or surgeons, and that our students are often required at examinations to show an exact knowledge of methods of research and details of chemical processes, which they will be glad to dismiss entirely from their minds as soon as they handle the coveted parchment.

Beaconsfield, in one of his satirical sketches (I think it is in the "Infernal Marriage"), represents the high priests or bishops in the domain of Pluto as being elevated to that dignity—not because of their piety or learning, but because of their pedestrian powers. No sooner, however, did their special qualifications in this respect raise them to the highest dignity, than they were forbidden ever to walk again, being always required to ride on white asses. In like manner, when a student becomes skilled in the recognition of plants, acquainted with all the steps of embryological change in men and animals, or able to demonstrate a muscle curve with a myograph, he is required to put aside all such things for ever, and come down to the level of feeling pulses, looking at tongues, prescribing for over-fed mortals, or mitigating the physical effects of poverty in a parish appointment. On these grounds, then, we agree that a year or so in general practice would be a real and important gain to the great bulk of our students, and the question is, When is this time to be put in?

The Medical Council says the *fifth year*, and limits the time of such pupilage to six months. To this there are two objections: the first being that it will be difficult, if not impossible, to get such a situation for so short a time; and the second, that no man will have confidence in coming up to attempt the final examination, without having recently studied at the school, and revised his knowledge of how things are done, and what are the current views on certain subjects.

My experience as a teacher leads me to think that the best time would be after the student has got satisfactory know-

ledge of the more purely scientific subjects and passed the examinations in them. This would be at the end of his third year. He would by that time have had nearly two years' hospital practice, would have acted as dresser and as clinical clerk, and would be so far of assistance to the practitioner with whom he was placed that he would certainly earn his bed and board, and possibly a little more. After a year in practice he would return for a year to the college and hospital to take the later courses, much more eager to learn, because he would have found out the importance and value of the knowledge to be gained, and more ready to appreciate and remember the facts placed before him, because his own experience would furnish a commentary to so many of them. Nor must it be supposed that this arrangement limits systematic courses to six months, or that it necessarily implies the cramming of these, as well as all the special studies, into a short nine months of college and hospital work. Much will depend on what is understood by elementary physics and elementary biology, which are now to be first year's studies, but if the word "elementary" has any meaning at all in relation to these courses, there will be no reason why junior anatomy should not be taken in the first year, in which case surgery and midwifery might be included in the courses for the third year. Until, however, we see the scheme in actual work, it will be impossible to state positively what will be the most satisfactory arrangement.

What we have to aim at, if we would improve the standing of our profession, and would ensure the fullest and most thorough equipment of those who practise it is—(1) a distinctly high level of preliminary education; (2) a sound basis of scientific knowledge, wide in extent and fairly minute in detail; and (3) practical experience on the part of the taught, more especially in those parts of his profession which are most likely to bulk largely in actual practice after he obtains his qualification.

In our technical teaching we must recognise that the student has first of all to be taught *how to observe*, and in the second place *what to observe*. In the past our attention has been too exclusively directed to the latter aim, and hence the student has been encouraged to take his information at second hand, and to rely on text-books, or on notes taken at lectures, instead of using his senses and his brains, and on the evidence of these drawing his own conclusions. I am as urgent now as I was 11 years ago in recommending a judicious scepticism, both as to the statements of books and of lectures. The multitudinous

newspapers, weekly, daily (and I had almost said) "hourly"—the "society" journals, with their scraps of scandal put in to-day to be serenely corrected in the next issue—the increasing number of monthly magazines, of all shades of opinion and all degrees of merit—the monographs on every subject, literary and scientific—the memoirs of the illustrious, the notorious, and the undistinguished; all these should by this time have thoroughly disillusionised us as to the sacredness of a scrap of paper with print on it, and might indeed serve to justify a scepticism even more pronounced than I claim from you. A writer, with whose works I hope you are very familiar, has told us to "prove all things, hold fast to that which is true;" and it is exactly this proving which I think is demanded of every student of medicine. We thank God that our science has been so far emancipated from the swaddling clothes of tradition in which for so many centuries it lay, bound hand and foot, and that it is now beginning to run alone, to breathe the free air of heaven, and to show signs of healthy growth, and indications of an heroic mould. That it may be kept free and healthy should be our aim, and to that end I would constitute every student of medicine (whatever his abilities, or whatever diploma he is going in for) an original observer, engaged in scientific research, and would have him stirred to a generous rivalry and emulation with his fellows in the discovery of new facts and the verification of old ones. It is because others are possessed by this same notion that so much objection has been taken latterly to the lecture system, and that a serious attempt is being made to cut down the number of lectures to at least half the number at present given. If by lectures is meant classical discourses carefully written out, and delivered year by year without material change, without illustration by specimens or models, and without the presentation of actual cases of disease or injury, by all means let them be abolished. Lectures which give no new idea, which give only what is described—and better described—in text-books, and which secure the bodily attendance, but not the mental attention of the student, are worse than useless. On the other hand, all demonstrational teaching is valuable and helpful, and indeed the only true means by which the teacher can aid the pupil; if he can say in effect, "You are judges of my words and can for yourselves ascertain their truth; here are the living facts before you, I am but the showman to point them out," then, and then alone, will he give vitality to his prelections, and his teaching will be successful, for he will train the minds and not alone the memories of his

students. Still, it has been the experience of most of us that we have once perchance in our lifetime listened to a lecturer who has been able to clothe old and well known facts with new meaning, whose very voice has had a magic of its own, and whose presence and manner have given us an enthusiasm as to the study on which he spoke which no mere book could give. Such men are rare, and are getting rarer year by year; for this is an age of books and not of orators; but we should retain the power to make use of them when we can get them. If, instead of demanding courses of "lectures" we made it courses of "study," or "courses" simply, the difficulty would be met; then, each teacher would be at liberty to use whatever method he found most successful, whether by formal lectures, practical demonstrations, tutorial classes, oral examinations, written examinations, the writing of essays, the preparation of reports on cases, the execution of set tasks, prizes and awards for original investigations, or any other mode he could devise. If, then, there were free competition in teaching (the goal at which we have aimed so long), and no obstructive restrictions such as now exist, the best teacher, or the teacher having the best method, would demonstrate his fitness, and "survive." By a mere stroke of the pen, by the alteration of a single word, this great reform would be achieved! Is it too much to hope that we may see it accomplished in our time?

Students can be best taught in small classes, and the substitution of other modes of teaching for the formal lecture admits, nay more, demands the division of the large classes into sections and the employment of many assistants. Much as we may deplore that students have not yet been attracted in larger numbers to the class-rooms of St. Mungo's College, we may rejoice that this very fact has rendered our teaching more thorough, and our success therein more conspicuous. We are not in a position to boast much of our *financial success*, nor indeed should boasting on this score ever be indulged in, excepting as indicating that the higher qualities of good teaching have not been wanting; but we can at least say that in no other institution in the kingdom have men better opportunities of obtaining a thorough and practical knowledge of their profession than here. It is therefore a strange circumstance that so few University students should have yet found their way here, and after making all due allowance for the geographical difficulty, and for the manner in which the ordinance which allows extra-mural classes to be taken is rendered null and void, there still remains some unrecognised factor to account for, and which I have hitherto

sought in vain. Is it not possible that this blindness of University students to their own interest may be partly due to ignorance, and that many students who wish to graduate at the University are not aware that they actually have any option whatsoever in the selection of where or how they shall study? I have more than once been consulted by personal friends as to the medical courses their sons should take at Gilmorehill, and in no case has it occurred to these parents that it was possible for students to study under me personally at St. Mungo's College, nor (I ought perchance to apologise while I admit it) have I urged my own claims in the matter. Again, it seems difficult to understand how it was that the Royal Infirmary School of Medicine existed so many years and received no endowments for its chairs, unless on the supposition that our wealthy and benevolent citizens were ignorant of its claims and work.

To make a successful teacher in any subject, a man must not only have a wide and thorough knowledge of that subject, and an enthusiasm which a dull audience or a small class cannot damp, but he must be prepared to make much personal sacrifice, must "scorn delights and live laborious days," and must in large measure disregard the money-making aspect of his work. He should, moreover, cultivate the habit of mentally putting himself in the place of the student, especially the "foolometer" (as O. W. Holmes calls the dullest man in the class), and not be above condescending to the A B C of his subject. He must be prepared to spare neither time nor labour in elucidating, explaining, and demonstrating what he would have known, and must not be discouraged if he finds the essential points of his teaching misunderstood or disregarded; and lastly, he must be always courteous, considerate, and patient! If he has all these qualities, but has not the faculty for advertising himself, or has a conscientious conviction that book-making is sadly overdone, he may hope to earn a pittance which one of our merchant princes (penurious though he be) would be ashamed to offer to his cashier or manager. It is little credit to our country and our age that the science teaching which forms the basis of the education in the art of saving human life and limbs should almost invariably have been overlooked by benefactors. It is not difficult to obtain endowments for professorships of subjects bearing on manufactures, or industries calculated to the making of money, while it is quite a rare thing to find anyone coming forward to offer funds for the maintenance of chairs on any medical subject whatsoever; it would appear as if there must

be some mistake in a statement which we have on unimpeachable authority that the "life is more than meat and the body than raiment." It would be ungenerous to deny that there are some notable exceptions to this stricture, and that recently a chair of anatomy has been endowed in University College, Dundee, and a chair of mental disease in our own College. If we look to our colonies or to America, we find a much more generous appreciation of medical science, for both in Australia and the United States the benefactions to medical colleges have been numerous and great; I need only instance the Challis bequests to the University of Sydney, calculated to amount, when realised, to nearly one-and-a-half millions sterling, and from which the chair of anatomy and the chair of physiology are endowed to the extent of nearly £1,000 a year each. Is it too much to expect from the wealthy and generous citizens of Glasgow, endowments to the extent of one-tenth of that sum for the corresponding chairs in this college? It is claimed as the supreme glory of this nineteenth century of the Christian era, that never was so much done throughout the world's history as now, to help the helpless, to save life, to relieve pain, to succour the outcast, to minister to the infirm and incurable; surely in furtherance of those very ends medical skill plays no small part, and it would seem, therefore, to be a necessary outcome that medical training should be fostered, assisted, and encouraged in every possible way.

But I turn from the teachers to the taught, from the schools to the scholars.

It is a matter of regret that so many youths commencing medical study, enter, in their first two years as students, on courses which are most prejudicial to their welfare, and pick up with companions who do them a life-long mischief. For most of these I have the warmest sympathy and deepest pity. They are sent up to us, often as mere boys, finding themselves for the first time in their lives free from the restraints of home and school, and having the command of more money than they have been accustomed to, thrown into the midst of pleasures, distractions, and temptations of a large town, and having their time only partly occupied by the studies they have undertaken. They fall a ready prey to the first senior student who takes pity on their ignorance, and offers to show them something of that world they are so eager to encounter, and to introduce them to pleasures which have the charm of novelty and the more doubtful one of being forbidden. It is my mature opinion that reputation, health, money, and even lives would be saved by such youths being placed under the

care of a medical tutor or other trustworthy person, of whose family they could form a part, and where the lessons of self-restraint, and even of self-sacrifice, from which alone true heroism and true manliness can spring, could be learned. No doubt a parent may be excused for hesitating to incur an expense of £100 to £120 a year in this way, but if his boy takes two years longer in obtaining his qualification through living in lodgings, and even when qualified is no credit to his friends or himself, the economy is not very apparent. In some of the London hospital schools there have existed for many years residential chambers, where a certain number of resident students have been lodged; this is notably the case with St. Bartholomew's, one of the oldest and largest of the schools. These have proved such an advantage to students, and such an attraction to them, that many other London schools have latterly taken steps in the same direction, and there are now fully equipped residential colleges at Middlesex, St. Mary's, and Guy's Hospitals, and residential chambers at King's College. The residential colleges are managed much on the same plan as the colleges at Oxford and Cambridge. There is a resident warden—generally a medical man—who receives the rents of the rooms, is answerable for the good conduct of the residents, and (in some of the colleges at least) holds tutorial classes on the subjects of the professional examinations. The expense, as well as the mode of payment, varies a little in different colleges. In St. Mary's the sum of ninety guineas for the nine months includes all meals, but no instruction. At the Middlesex College the payment varies with the floor on which the rooms are situated (the higher up, the lower the charge), and with the time of year, but the average is £16 per term of three months; this includes dinner, but no other meal; it also includes free admission to the tutorial classes. At Guy's the rooms are rented at from nine to twenty shillings a week; this of course does not include meals, but the latter may be arranged for by paying a fixed charge of one guinea per week, paid monthly in advance; or the student can pay for each meal on the club tariff; these charges do not include any tuition. At St. Bartholomew's, I understand, the charge averages £2, 2s. per week including meals, but without any tuition.

These establishments are governed on the autocratic and aristocratic principle which exists in the colleges of Oxford and Cambridge, the warden being a sort of head master, who, if he does not use the birch or tawse, is able no doubt to castigate the youths in other ways. As far as I can gather, the

residents themselves have no say in the management of the college, and are so far kept under authority that they must not be out after eleven P.M. without reporting themselves, or be absent for a night without the permission of the warden. The Middlesex College is so far democratic that it is worked by a limited liability company, the shareholders being chiefly the college and hospital staff.

If I suggest that we might be the better for something of this kind in connection with our schools in Glasgow, I shall be met by the reply that such a thing is contrary to the spirit and working of Scotch schools, that it is impracticable here, that it could never be made to succeed, that our students are too poor, &c. No doubt, the democratic tendencies of the age (so much more marked in Scotland than in England) tell against the success of such a scheme, yet I am told that at Guy's Hospital they cannot supply all the applicants who ask for rooms, and I have shown that this new development is gradually spreading to all the schools. I do not see why, with a few modifications, the plan should not work here, to the benefit of the students primarily, and of our College in the second place. Certainly, I would earnestly desire to see some way of surrounding these young lads with good influences, of bringing them into contact with good companions, and of developing in them a sense of comradeship and an *esprit de corps* for their school and hospital, so that they may not so much feel as they now do their individuality and their loneliness.

In Edinburgh the experiment has been tried on a fairly large scale, and has been attended with gratifying success. In 1887 a commencement was made by taking a house on the Mound, next to the Free Church College; this was decorated and furnished at the cost of Professor Patrick Geddes, who has taken up the matter with the enthusiasm and energy which such a new departure demands; and in a few months the rooms were all occupied, and it was found necessary to take in the upper and lower flats to give more accommodation.

Last winter, again, rooms were found for three residents in Professor Geddes' own house, and this winter a still further extension has been made, by that gentleman purchasing and fitting up a large house in Riddle's Close, High Street, one of the old historic houses of the Old Town of Edinburgh. I had much pleasure the other day in being present at the inauguration of this last house, and afterwards in dining in the hall with the students at the house, 2 Mound Place. Both houses are throughout fitted up most comfortably, and with an

artistic beauty and variety which few private houses can boast; Professor Geddes having strong faith in the education of the artistic sense and the love of beauty even in medical students. The whole of the rooms furnish accommodation for about 35 students, and are almost entirely taken up; I had a talk with several of the residents, and they spoke in the highest terms of the movement, and of the gain it had been to themselves. "The rents of rooms (says the report of the University Hall Committee) vary from 9s. 6d. to 16s. per week, according to situation and style of room. The food bills, which include the keep of the servants, are paid fortnightly, an equal share of the total sum being contributed by each resident. The average cost to each resident is 12s. per week." Thus, the total cost for lodging and entire board runs from 21s. 6d. to 28s. a week. Professor Geddes, in a letter to me on the subject, says—"Such work requires an organiser who understands (1) making men comfortable and proud of their house, (2) throwing the whole responsibilities of finance upon them. Beware of lawyers, philanthropists, and authoritatively minded professors! The Scotch student must have his republican, not hierarchical, type of college, and the thing must grow from a small start." He also points out that such University or College Halls as he has started may be associated with similar halls in Continental schools, and between them there may be a pleasurable and profitable intercommunication. Of the other aspect of such settlements as centres for mission work or social amelioration of the masses, it would not become me to speak; I am only discussing their advantages for the medical students themselves, and in this respect I hail the movement as one of great promise and deserving of every possible encouragement.

But I find I have reached the last pages of my address, and yet have offered you none of that good advice which is considered so essential an ingredient of all introductory addresses.

Advice has been described by a witty writer as "almost the only commodity which the world is lavish in bestowing, and scrupulous in receiving, although it may be had *gratis*, with an allowance to those who take a quantity." But even at the risk of my advice being valued at the price paid for it, I will venture on one precept—that is, *Be thoroughly in earnest in every work you undertake.* Without enthusiasm no great or noble act was ever accomplished, no great thought uttered, no reputation gained. The student who goes through his course of study with the idea of doing as little as possible, who attends classes because it is necessary to get his ticket signed,

who literally "*walks the hospitals*," but will not report a case or dress a wound, and whose highest literary effort beyond his text-books is the perusal of *Ally Sloper's Half-Holiday* or *Illustrated Scraps*, will never attain to the full stature and growth of a *man* in the best sense of that title. He is doomed, unless he sees the error of his ways, and repents with a repentance not to be repented of, to sink at best into the chronic student, and at worst to become shattered in health and shipwrecked in fortune, an incubus to his friends and an affliction to himself all his days. Our examinations are for the purpose of substituting *necessity* for *enthusiasm* in such men; if a man won't study from the love of knowledge, he must do so in order to pass the examination, hence they are a means to an end—not the end itself—though many think they are. But the student who is in earnest should not need such incentive; his aim should be to obtain knowledge, to wrest from nature the secrets she has stored away, to get wisdom in all possible ways and at all possible times, never weary of the quest, never happy unless each day shows its record of conquest and of added store. To provoke such worthy enthusiasm will be our aim in the courses to which this address forms an unworthy introduction, and if we succeed in our endeavour, no matter what our faults as lecturers, as men of science, or as simple men, we shall have fulfilled our purpose, and shall claim alike your gratitude and your remembrance.

NOTES OF A CASE OF PULMONARY EMBOLISM OCCURRING BEFORE DELIVERY.

By W. G. BARRAS, M.B., C.M., L.S.Sc.

MRS. M., æt. 36, married 11 years, was seized with labour pains on the morning of the 31st ult. On examination at 10 A.M., the os was just beginning to dilate, but the pains were short, and only occurring at long intervals. On seeing her again at 4 P.M., labour had made considerable progress, and everything was going on favourably, with the exception that the pains were still rather feeble, and to strengthen them, repeated doses of ergot and whisky were administered. At 4.45 P.M. she was suddenly seized with great dyspnoea, syncope, and præcordial distress, and cried out several times that she was going to die.

As a result of this, when the pains come on, she had to

gasp out for breath, and so produced but little effect upon the advance of the head.

At 6 P.M. she was delivered of a healthy living child, the presentation and delivery being normal and natural.

After this she became gradually worse, and her husband and friends being apprised of her dangerous and apparently dying state, it was agreed to have a consultation.

At 11:30 P.M. Dr. W. L. Reid arrived, and examined the patient, and he was of the same opinion, that she was suffering from embolic obstruction of the pulmonary artery.

After this she sank rapidly, and died at 3 A.M., or nine hours after delivery.

Family History.—Father died at the age of 68—from apoplexy. Mother—at the age of 75, from pneumonia. A granduncle—age unknown, of apoplexy. Two sisters, one single, æt. 24; the other married, æt. 32; both of “decline.” Two sisters alive and well, aged respectively 40 and 50. One brother died at the age of 32, also from “decline.”

Personal History.—At the age of 17 she burst a blood-vessel in the lungs, and nine years afterwards, at the time of her first confinement, she spat up some blood-coloured sputum. She was always afraid that this would recur, but eighteen months after the latter event, she was delivered of a second child, when she made a rapid and complete recovery. Five years ago she had a miscarriage, so that an interval of nine years transpired between her last and present child.

During life she was much troubled with shortness of breath and palpitation, especially on exertion, but at no time did she suffer from any cardiac or other pain; she never had any marked varix of the external veins, nor dropsy, nor was any disease of the heart or lungs discovered, beyond the fact of the blood-vessel “bursting” 19 years ago.

Pathological Considerations on this Case.—Playfair states that embolism of the pulmonary artery is a more frequent cause of sudden death after delivery, than thrombosis, and that embolism occurs at a much earlier period after delivery than thrombosis, but in a case recorded by him (*British Medical Journal*, 27th March, 1869), and which was proved by *post-mortem* examination, the embolus seems to have been detached *before* delivery; this also seems to have manifestly occurred in this case, as the symptoms set in about an hour and a half before delivery, which symptoms pointed unequivocally to obstruction on the right side of

the heart, viz., the urgent dyspnœa, syncope, cyanosed condition, and appearances of great anxiety, along with the labouring state of the right ventricle.

The only theory upon which I can explain this case, is that it was due to the phthisical tendency and weak state of the patient's heart, aided by the highly fibrinated condition of the blood. At this time a thrombus had formed in the heart and vessels, which, becoming dislodged, was swept along the current of the circulation, until it reached the pulmonary artery, producing the above results, denoting sudden and serious obstruction to the circulation in the lungs and right side of the heart, leading to increased pressure within the vessels, and diapedesis, which would account for the excessive quantities of blood-tinged sputum which were expelled from the lungs, but differing entirely from the pneumonic spit of the cases where a hæmorrhagic infarction would take place. The negative theories in this case are, thrombosis of the uterine veins after childbirth, air or cerebral embolism.

The *treatment* was mainly stimulant, by giving small and repeated doses of whisky, beef tea, chloric ether, and aromatic spirits of ammonia, whilst mustard poultices were applied to the front of the chest only, as it was considered imprudent to change her position in bed, in case sudden collapse should occur, whilst she was made to inhale nitrate of amyl and turpentine, which alone gave her great relief.

A *post-mortem* was requested, but her friends objected to such being made.

TWO CASES IN WHICH DYSPNŒA AND DYSPHAGIA WERE MARKED SYMPTOMS—ONE A CASE OF ANEURISM, SIMULATING STRICTURE OF THE ŒSOPHAGUS, THE OTHER AN EPITHELIOMA OF THE ŒSOPHAGUS, SIMULATING AORTIC ANEURISM.*

By DAVID NEWMAN, M.D.

MR. PRESIDENT,—The two cases I purpose bringing before the Society to-night were under observation at the same time, and died within a few days of one another, so that they aroused considerable interest, and presented some difficulties to my

* Shown by Dr. Newman and Dr. John Lindsay Steven, at the Pathological Section of the Medico-Chirurgical Society in December, 1890.

mind. I therefore thought that it might be of advantage to learn the experience of the members of this Society in similar cases.

Sir, with your permission, I will narrate the history of the cases, and afterwards make a few remarks regarding the points of importance and the difficulties presented in each case.

EPITHELIOMA OF THE ŒSOPHAGUS AT THE LEVEL OF THE BIFURCATION OF THE TRACHEA—ULCERATION AND RUPTURE INTO THE AORTA—EARLY SYMPTOMS, DYSPHAGIA AFTERWARDS IMPROVING, DYSPNŒA, UNEQUAL INSPIRATION IN LUNGS—DULL AREA POSTERIORLY—DEATH FROM HÆMORRHAGE.

G. A., æt 57, was admitted into the Glasgow Royal Infirmary, on the 25th March, 1890, complaining of difficulty in swallowing, which, he said, commenced at the beginning of December, 1889. The first difficulty he experienced was in swallowing solid food, and this gradually increased until the middle of February in the present year, when he had to give up taking solids, and since that time his diet has been composed entirely of liquid food. During the act of swallowing he feels as if the difficulty in deglutition was caused by constriction at the level of the cricoid cartilage, but once the bolus has passed that point it occasions him no trouble, nor has he ever suffered from vomiting, cough, alteration in the voice, or pain. The pupils are equal, and the radial pulses are synchronous and equal in force, although somewhat weaker than normal. On passing a bougie (No. 16), a complete obstruction is met with, 13 inches from the teeth, so that the stricture of the œsophagus may be said to be situated between the level of the suprasternal notch and that of the bifurcation of the trachea. The largest size of bougie which passed through the stricture was a No. 6. On enquiring into the history of the case, no evidence could be found to show that the patient at any time suffered from syphilis, or sustained any traumatic injury to the œsophagus. On palpating the neck, nothing abnormal could be discovered in the line of the gullet nor in the lymphatic glands. The larynx and trachea, as far as could be seen, were strictly healthy, but on the least exertion the patient suffered from well-marked dyspnœa.

Physical examination of the chest shows the cardiac sounds to be pure, but feeble, and very irregular in rhythm; but there

is no evidence of valvular disease. I did not examine the condition of the lungs critically, but posteriorly, in the interscapular space and to the left side of the spine, on a level with the fourth dorsal vertebra, and, extending upwards and downward from that point, there could be detected a distinct localised dulness, occupying an area of about three or four square inches. Associated with this dulness to the left side, and about the same level as the obstruction in the œsophagus, there was evidence that air was not entering the left lung so freely as the right.

The patient was sent to Dr. Jas. Wallace Anderson, who kindly furnished me with the following report:—"The upper left front of the thorax is slightly retracted, and there is a corresponding diminution of expansion, there also being a rather increased resonance on percussion over the same area. The R.M. over this area is less fuller and freer than on the right side, at some points being hardly audible, at others of a whiffing, wavy character, but always faint." . . . "Posteriorly there is a mere suspicion of dulness in the upper left interscapular region. The R.M. is distinctly fainter on the left side at the level of the third, fourth, and fifth dorsal vertebræ, and this diminution is continued one or two vertebræ lower on that side. The R.M. over the left lung generally, though quite audible, is fainter than on the right side. There is no alteration in the V.R., and no râles are heard anywhere. Cardiac phenomena and circulation generally are all perfectly natural."

At this time (1st April), I was quite satisfied that the case was one of cancer of the œsophagus, but as there was no demand for surgical interference I transferred the patient to Dr. Wallace Anderson's care. During his residence in Dr. Anderson's ward he was kept at rest in bed, and as a result of treatment the symptoms became less pronounced, and the patient desired to be dismissed, and to return to his ordinary employment. Between the 1st of April and the 24th of May great improvement took place in his power of swallowing, and he gained in weight, so that when he was dismissed he was able to swallow not only fluids with freedom, but, with a little care, solid food as well. This improvement, with freedom from pain in swallowing, and the absence of vomiting, emaciation, or anæmia led me to doubt the accuracy of my first diagnosis, and consider whether or not the dysphagia and impaired respiration on the left side might not be due to the presence of an aneurism or solid tumour at the bifurcation of the trachea. A large-sized bougie now passed with ease.

During the summer months the patient enjoyed moderately good health, and was able to swallow well both fluid and semi-fluid food; but in the autumn he again began to suffer from dysphagia, and he stated that since he was dismissed from the Infirmary he suffered greatly from breathlessness.

Patient was re-admitted into my ward on the 7th October. On passing a bougie (No. 12) it was found to be impossible to get it past 13 inches from the teeth. At this time I went over the case very carefully again, and found the patient to be very much in the same condition as in April, except perhaps he suffered more from dyspnoea, and I made a note in the journal to the effect that "although there are no positive signs of aneurism, the situation of the obstruction, the dyspnoea, the impaired respiration on the left side, the area of dulness posteriorly, and the history of the case, raise the gravest suspicion of an aneurism at the bifurcation of the trachea." On the 18th October the patient spat up a small quantity of dark blood, and for the first time complained of pain in the chest. On the 28th he again suffered from a deep-seated gnawing pain in præcordial region, and when I saw him in the morning he was looking very ill. At one o'clock on the following morning the patient raised himself in bed suddenly, because of some distress referred to the chest. Immediately he sank back on the pillow and became blanched, his pulse at that time being small and thready, and a few minutes afterwards almost imperceptible, while he continued to breathe after the pulse had ceased.* The breathing was very peculiar in character, being of a sighing nature. Between each respiration an interval of about half-a-minute occurred, which gradually increased until the breathing ceased altogether. This form of respiration lasted for about eight minutes.

Post-mortem examination revealed a malignant perforating ulcer of the œsophagus opening into the thoracic aorta, causing fatal hæmorrhage into the stomach and intestine. Dr. Lindsay Steven's report was as follows:—"The pericardium contains about 3 oz. of slightly blood-stained serum. The heart is very soft and flabby, and its external fat is much increased on the surface of the right ventricle. The aortic and pulmonary curtains are competent. There is slight atheroma a little above the free margins of the semilunar curtains, but the orifices of the coronary arteries are patent. The muscular tissue is very soft, but on the whole normal-

* The mode of death was observed and described by Dr. J. G. Gray, the Resident Assistant, who kept careful notes of the case.

looking. On cutting into the septum, slight yellowishness of the fibres is observed. The lungs, trachea, and gullet are removed together. The left lung is pretty generally, and moderately firmly, adherent, the pleura in this situation being of cartilaginous hardness, and perhaps even slightly calcareous in parts. This very firm adhesion on the left side extends upwards as far as the fifth or sixth dorsal vertebræ, but does not extend round towards the front. After the thoracic viscera have been removed, a probe is passed into the gullet from above, and its further progress downwards is completely arrested at the level of the bifurcation of the trachea. On passing the probe from the gastric end of the gullet, it passes through the entire length of the tube without any difficulty. The trachea is then opened along its posterior wall, almost to the bifurcation, but nothing abnormal is seen in it. The thoracic aorta is then laid open by cutting with the scissors from below upwards. Its internal coat presents tolerably healthy characters, but about an inch below the arch, and towards its posterior border, a circular opening with thin and somewhat ragged edges is found; this opening leads into a ragged cavity. The gullet is next laid open, and at the level of the obstruction just mentioned a large ragged ulcerated cavity containing debris of blood clot and broken-down tissue is found in its wall. The upper margin of this excavation is raised and rather sharp, and presents the typical characters of the margin of a malignant ulcer. The cavity had evidently eaten its way into the aorta, and produced the aperture in that vessel described above. It should also be noted that the wall of the aorta, in the neighbourhood of the aperture, which is about the size of a threepenny-piece, is somewhat thinned."

ANEURISM OF THE TRANSVERSE AND DESCENDING PORTION OF THE ARCH OF THE AORTA—DYSPHAGIA, DYSPNŒA, AND PARALYSIS OF LEFT VOCAL CORD AS EARLY SYMPTOMS—PHYSICAL SIGNS EQUIVOCAL—LATER SYMPTOMS MORE CHARACTERISTIC OF ANEURISM.

The patient, J. A., a labourer, was admitted into the Glasgow Royal Infirmary on the 5th September, complaining of dyspnœa, dysphagia, and hoarseness of the voice. The first symptom complained of was difficulty in phonation, which commenced seven months ago. Shortly after this time the patient suffered from breathlessness, which varied much from time to time, but was always brought on by physical exertion; and the patient states that although the difficulty

in breathing was not always the same, there was nothing corresponding to a paroxysmal dyspnoea. Comparing one week with another, it may be asserted that the dyspnoea has been steadily increasing from the time of its first onset until the present. So much so, that, for some days previous to admission, he could not remain in the recumbent posture. In respect to difficulty in swallowing, it may be said that the patient never was prevented from swallowing fluid or semi-fluid food, but on many occasions he was quite unable to swallow such articles as bread, meat, and potatoes. On admission to the ward the patient, who is a stout, florid man, appeared to suffer considerably from breathlessness after ascending the stairs, but when rested for a short time he permitted a short examination to be made.

Laryngoscopic Appearances.—With the exception of slight hyperæmia of the mucous membrane, the colour of the larynx is normal. Both vocal cords are normal in appearance, but their movements are restricted, especially that of the left cord. It remains a little to the left of the middle line, both during inspiration and attempted phonation, and has the bow-shaped appearance of paralysis of the tensors. During forced inspiration the chink of the glottis is only about half of its usual dimensions.

Examination of the œsophagus with a full-sized bougie revealed the presence of an obstruction at the level of the bifurcation of the trachea; but, on account of the equivocal symptoms and physical signs, it was regarded inadvisable to use any force or even to repeat an œsophageal examination.

Physical examination of the chest reveals the presence of an area of dulness in the middle line in front, the centre of which is on a level with the second left costal cartilage, and the area may be said to occupy in all about three square inches. There is no pulsation over this area, nor can a murmur be heard. Posteriorly, at the level of the bifurcation of the trachea, the sounds produced by deglutition are prolonged, and there is a distinct delay in the passage both of fluid and semi-fluid food at the point indicated. The respiratory sounds are equally well heard in both lungs.

After carefully considering the symptoms and physical signs, it was clear that the diagnosis lay between an aneurism of the transverse or descending portion of the arch of the aorta, a mediastinal tumour, and a tumour of the œsophagus. The patient was sent to Dr. Alexander Robertson for an expression of his opinion, when he favoured me with the following report:—

"There is probably a tumour in the anterior mediastinum pressing on the trachea immediately above the bifurcation. The points in favour of a tumour, as opposed to an aneurism, are negative and positive :—The negative are that an aneurism in this situation would probably have induced pulsation in the episternal notch, and, with the prominent symptoms presently connected with his breathing, there would probably have been a wider area of dulness than there is. There would probably also have been interference with the circulation in the arm or arms, or in one or other side of the neck. There is no expansile sensation nor sensation of pulsation on compressing over the chest wall. There is no bruit, although, of course, this is an uncertain indication.

"The positive indications are :—The presence of an area of dulness in the sternal region corresponding with the insertion of the second ribs, and of about half-an-inch above, and half-an-inch below this point. To the right side of the chest the heart sounds are unusually well conducted. The veins of the chest and abdomen, and even of the back of the chest, are more prominent than usual, especially when patient coughs. When patient bends his head backwards the oppression of breathing is markedly increased. There does not appear to be any difficulty in the breathing in the two lungs. The character of the breathing seems more indicative of obstruction to the respiration in the trachea or bronchi than at the vocal cords."

During the first fortnight of the patient's residence in the ward considerable improvement occurred, both in the respiration and in deglutition. But towards the beginning of October the dyspnœa became so marked that the patient was unable to maintain the recumbent posture during sleep, and even when kept in the semi-erect position he had difficulty in procuring a good night's rest. During this time the sputum had been increasing in amount, and was more viscid and difficult of expectoration than formerly.

On the 10th of October the following note was made :—
"Since admission, with the exception of the first fortnight, the condition of the patient has not improved, and he now complains of great difficulty in breathing, especially during the night; so much so, indeed, that it has been found necessary for the last fortnight to keep him in the erect posture while asleep. Since the beginning of October the expectoration has been more or less stained with blood.

"Physical examination of the chest shows the dulness noticed on admission, and referred to in Dr. Robertson's

report, to be unaltered, and there is still no pulsation at any part, and the pulses remain equal. The presence of blood in the expectoration, however, strengthens the supposition that there is an aneurism at the transverse portion of the arch of the aorta."

On the 18th of October, and during the two preceding days, the patient had considerable difficulty of expectoration, while the difficulty in breathing was greater than before, so that the patient got almost no sleep at night.

On the morning of the 19th instant patient died suddenly. While he was in the act of coughing he vomited a large quantity of blood, and expired within a few minutes. There was marked pallor of the skin and mucous membrane at death.

Post-mortem examination revealed multiple aneurisms of the thoracic aorta with rupture into the trachea and erosion of the vertebræ.

The following note was made by Dr. Steven in the *post-mortem* journal:—"The left recurrent laryngeal nerve cannot be traced behind the aneurismal tumour, in whose wall it has become incorporated. It is easily found, however, below the tumour and above, and is seen in the preparation. The right recurrent laryngeal nerve is also dissected, and found to be normal. The anterior wall of the transverse aorta is removed, when it is seen that there is a large sacculated aneurism filled with blood clot. It communicates with the interior of the vessel by a large opening with rounded margins. The aneurism springs from the posterior aspect of the aorta, and has become firmly incorporated with the anterior surface of the trachea, immediately above the level of the bifurcation. A black probe has been passed from the interior of the aneurism through the small opening into the trachea. The left ventricle is somewhat hypertrophied, and all the valvular structures are apparently normal. The lungs are voluminous and, indeed, over-distended, the enlargement being rounded and emphysematous-looking. The pleural surface of the lung shows numerous areas of a bright red colour, due to blood shining through it, and it is perfectly evident, from the appearances of the pleura, that the pulmonary tissue has been extensively insufflated with blood. No tumour can be seen or felt in the anterior mediastinum, and it is therefore resolved to remove the contents of the mouth, neck, and thorax, *en masse*. In doing this, a small aneurism, at the junction of the transverse and the ascending portions, is opened into, at the level of the fourth and fifth dorsal vertebræ, which, on their

left side, had been eroded by the tumour—the intervertebral cartilages escaping. This aneurism is oval in shape, and an inch-and-a-half or two inches in length, the long diameter being in the long axis of the vessel. After removal the œsophagus is opened, and, beyond containing a little blood, presents no abnormal character. On opening the trachea along its posterior surface, a minute aperture, with opaque, brown, sloughy edges, and only admitting the point of a surgeon's probe, is discovered in the trachea immediately above the level of the bifurcation, and situated on its left side. The tracheal mucous membrane, for some distance around the aperture, has a dark red colour. This aperture communicates with the interior of an aneurismal tumour springing from the posterior wall of the transverse arch."

Remarks.—Respecting the first case, the gradual increasing dysphagia, which, by the middle of February, prevented him from swallowing solid food, the presence of a distinct obstruction to the passage of a bougie, and the absence of any symptoms of aneurism of the aorta lead me to the belief, after having excluded the possibility of syphilitic or traumatic stricture, that the patient was suffering from an epithelioma of the œsophagus at the level of the bifurcation of the trachea. And the absence of paralysis of the left vocal cord favoured this view of the case. On the other hand, the marked dyspnœa on any physical exertion, independent of laryngeal, cardiac, or pulmonary disease, the inequality of the respiratory murmur on the two sides, the dulness on the left side of the spine posteriorly, the absence of emaciation, the improvement in the symptoms resulting from rest in bed, and the mode of death, all favoured the idea that the disease from which the patient suffered was aneurism of the transverse or descending portion of the arch of the aorta.

In view of the information derived from the *post-mortem* examination it is evident—(1) That the deficiency in the respiratory murmur, and the dulness on the left side of the spine, was due to an old limited pleurisy; (2) That the absence of emaciation, and the improvement in swallowing, resulted from ulceration of the carcinomatous growth; while (3) the mode of death was the immediate result of the ulcerative process extending through the gullet and the wall of the aorta.

When an obstruction to swallowing is detected at the level of the bifurcation of the trachea, great care must be taken in the passage of bougies. While I was pathologist to the Royal Infirmary a case came under my observation, where a very complete obstruction to swallowing was caused by an

aneurism of the aorta. In this case a physician, supposing the obstruction to be due to a tumour in the gullet, passed a bougie, and perforated, not only the œsophagus, but the wall of the aorta. The hæmorrhage, which resulted, caused the patient to be sent to the Royal Infirmary, and she died shortly after admission. This case made a very strong impression on my mind, and, as a consequence, I have been most careful when I discover an obstruction, in the situation indicated, to avoid the passage of bougies, unless it is very evident that there is no aneurism or ulceration of the œsophagus.

In the second case difficulty in diagnosis was only experienced during the early stage of the case, when, with evidence of well-marked obstruction in the œsophagus, there were no physical signs directly pointing to aneurism, and the only symptom which led one to suspect serious disease of the aorta was paralysis of the left vocal cord. The value of this symptom in distinguishing between aneurism and other causes of œsophageal obstruction is considerable, and, to a great extent, prejudiced my mind in favour of aortic aneurism as the cause of the dysphagia, even although no other symptoms pointed in the same way. And, while it is quite true that, in a few exceptional cases, unilateral paralysis of the muscles supplied by the inferior laryngeal nerve, may be caused by other conditions, I think it is of the utmost importance to bear in mind the undoubted fact that aneurism of the transverse arch causes paralysis in the large majority of cases. Indeed, for practical purposes, it may be looked upon as the cause of paralysis in nineteen out of twenty cases. Undoubtedly, cases have been recorded in which paralysis of the left recurrent laryngeal nerve has been the result of pressure by tumours in the œsophagus, by enlarged bronchial glands, by pleuritic adhesions, or fibroid induration of the apex of the left lung, by enlargement of the thyroid body, by great pericardial exudation, or by hypertrophy of the heart, leading by pressure or displacement to interference with the function of the nerve. The answer to the question—What is the cause of the paralysis?—is usually easy, but in a few cases it is almost impossible to give a definite reply. In such cases, I would say, treat the case as one of aneurism of the aorta. In my experience I have seen a considerable number of these at first obscure cases, and in the large majority they have proved, in the end, the accuracy of the statement I have just made. In the case just recorded, it is evident that there was considerable room for difference of opinion as to the primary disease, at least during the early stage, while, later on, the symptoms lead me to believe that there was an aneurism of the aorta.

THREE CASES OF STRICTURE OF THE ŒSOPHAGUS TREATED BY GASTROSTOMY.*

By DAVID NEWMAN, M.D., GLASGOW.

THE cases about to be described illustrate the presence of cancer of the œsophagus in the three most frequent situations in which that disease occurs. In the first case the epithelioma is situated at the lower end of the gullet, indeed, probably involving the cardiac orifice of the stomach; in the second case the tumour is immediately behind the larynx, while in the third the growth occupies a position close to the bifurcation of the trachea.

EPITHELIOMA OF LOWER END OF ŒSOPHAGUS—HISTORY OF SUDDEN AND STEADILY INCREASING DYSPHAGIA, CUL- MINATING IN ALMOST COMPLETE OBSTRUCTION—GASTRO- STOMY IN TWO STAGES, FOLLOWED BY IMPROVEMENT IN SWALLOWING.

W. H., a labourer, æt. 68, was admitted into the Glasgow Royal Infirmary on 7th October, 1890. He stated that about five weeks previous to admission he found one day that he was unable to swallow any solid food, although still able to swallow fluid and semifluid diet, some articles of food passing into the stomach more easily than others. As a rule, he experienced greater difficulty in swallowing hot than cold substances. Since the onset of these symptoms the dysphagia has steadily become worse, so that on admission the patient was greatly emaciated, his weight being reduced from 16 st. to 9 st. 10 lbs. Now, if fluid food be swallowed rapidly or in any quantity at a time, it is ejected with considerable force. There is no evidence of any pouching of the œsophagus above the seat of obstruction, the quantity of food vomited being only what has been last swallowed. On passing a full-sized bougie, an obstruction is met with at the lower end of the œsophagus, which, on further examination, is found to permit the passage of a No. 10 œsophageal bougie. The patient stated that he had not suffered pain at any time, nor had he noticed any blood in the vomited matter. There was no history of injury nor of syphilis. In respect to treatment little has to be said, the principal object being to introduce as much nourishment as possible in a concentrated form, both by

* Shown at the Glasgow Medico-Chirurgical Society, 9th Jan., 1891.

the stomach, and by nutrient, zymurised suppositories, and enemata.

27th October.—Since admission the dysphagia has become steadily worse, so that now the patient is unable to swallow more than a few spoonful of fluid in the 24 hours. His weight is now 9 st. 1 lb.

It now became apparent that, unless gastrostomy was performed, the patient must succumb within a few days. While the patient was under the influence of chloroform, an incision was made through the abdominal parietes an inch below and parallel to the left costal cartilages. The incision was an inch and a half long, and extended outwards and downwards from the margin of the left rectus muscle; with some difficulty, on account of the complete collapse of the organ, the stomach was felt. About a couple of square inches of the stomach wall was dragged through the incision in the parietes. A circle of sutures, each including about a quarter of an inch of stomach wall, were passed through the serous and muscular coats. The radius of this circle was about one-third of an inch. Each suture overlapped its neighbours by about one-eighth of an inch, so that when they were all inserted they resembled the tire of a wheel. After all the sutures had been inserted in the stomach wall, the free ends were introduced through the subcutaneous tissue and skin, and tied externally, so that when the operation was completed, an area of stomach wall about the size of a shilling was exposed to view. Through the centre of this area two silver sutures were passed parallel to one another, and about a quarter of an inch apart. This method of stitching, by which the peritoneum and muscular tissue were left free, and in full contact with the wall of the stomach, gave a broad base for adhesions, and ensured the formation of a complete sphincter. After the operation the patient complained of thirst, but otherwise he was perfectly comfortable. Two-thirds of a grain of morphia was injected, between the time of the operation and midnight. The patient was fed upon nutrient digested enemata and peptonised meat suppositories.

On 1st November a small galvanic cautery was introduced into the stomach between the two silver loops, which were held apart, so as to make a little tension upon the intervening area of stomach. Then a small gum-elastic catheter (No. 3) was passed into the stomach through the opening thus made, and fixed in position by means of adhesive plaster. He was now fed with milk, four ounces being given every two hours in addition to the nutriment administered by the rectum.

On 8th November a piece of elastic tubing the size of a No. 17 œsophageal bougie was introduced, and beef tea, milk, and masticated porridge and corn flour were poured into the stomach through a filler by the patient himself. After the food was so taken the tube was withdrawn, the patient remained in the recumbent posture and held a small pad of gauze over the opening. Within fifteen or twenty minutes the wound contracted, so as to prevent the escape of the contents. Now only a ring of mucous membrane, one-twelfth of an inch broad, is interposed between the opening in the stomach and the cutaneous surface. Within a few days this also disappeared. For the last two days the patient has been out of bed.

28th November.—During the last three weeks the patient has made very satisfactory progress, not only in his general health, but also in his ability to take food by the mouth. He first succeeded in taking milk and stout, and afterwards was able to swallow soft porridge and corn flour, and at a still later date such articles as bread and butter, finely minced meat, and on one occasion a soft biscuit. To-day he had by the mouth half-a-pint of porridge and milk, morning and evening, and almost a slice of bread buttered. By the 10th of December his power of swallowing had still further improved, and now, in addition to the porridge and milk which he takes morning and evening, he has been able to swallow a mutton chop daily for the last five days. The patient, however, has not been allowed to take more by the mouth for fear of setting up irritation at the seat of obstruction. The great bulk of the food is administered through the fistulous opening, feeding per rectum having been stopped on the 15th of November.

10th January, 1891.—The patient has gained strength considerably, and is going to return to work in a few days.

EPITHELIOMA OF ŒSOPHAGUS AT THE LEVEL OF THE LOWER EDGE OF CRICOID CARTILAGE—HISTORY OF STEADILY INCREASING DYSPHAGIA DURING TWO MONTHS, TERMINATING IN COMPLETE OBSTRUCTION—GASTROSTOMY IN THREE STAGES—STOMACH EXPOSED WITH COCAINE IN PLACE OF CHLOROFORM—STEADY IMPROVEMENT AFTER OPERATION.

W. F., æt. 50, a labourer, was admitted into the Glasgow Royal Infirmary on 3rd November, complaining of complete inability to swallow any food. The only substance which he could take by the mouth was very small quantities of brandy

and water. He stated that two months previous to admission he experienced a feeling of tightness in the throat on swallowing dry and solid food. This tightness he referred to the region of the larynx, and stated that it had remained always present, although it varied a little in degree from time to time. This constriction, however, increased, so that, three weeks ago, he was only able to take soft or fluid food. He did not complain of pain. There was no history of syphilis or of injury to the gullet, nor has the patient noticed at any time blood in his sputum. On passing a No. 13 bougie a distinct obstruction was found $8\frac{1}{2}$ inches from the teeth, and this stricture was so complete that no instrument could be passed through it. On palpating the neck a hard swelling 2 inches in length, from above downwards, was observed, situated behind the cricoid cartilage and the trachea, but there was no enlargement of lymphatic glands nor obstruction to respiration.

Physical examination of the chest revealed nothing abnormal. The only point to be noted was that the cardiac sounds, particularly the second sound, were extremely weak, and the pulse numbered about 50 per minute. The patient was very anæmic, and extremely weak from want of food, so that it was considered advisable to feed him by the rectum for a few days before attempting an operation. As a consequence of this, the pulse improved so much, that on the 6th of November the patient was placed under chloroform, and an incision was made through the parietes in the same situation as in the case of W. H. Immediately after the abdomen was opened the patient became pallid and almost pulseless, while even although the administration of chloroform was discontinued, little or no improvement was observed in the circulation for some hours.

In consequence of the danger arising from the continued administration of an anæsthetic, the further stages of the operation were postponed, the wound was kept open and dressed antiseptically, and the patient was placed in bed. He was fed by the rectum by means of beef-peptonoids, peptonised beef-tea, and meat suppositories. By the 9th of November the patient so much improved in his general condition that it was deemed advisable to complete the first stage of the operation, not under chloroform, but with the employment of cocaine; 3 minims of a 10 per cent solution (equivalent to about one-third of a grain) was introduced subcutaneously around the wound by four separate punctures. After five minutes the incision was enlarged, and the finger introduced into the

abdominal cavity. After considerable difficulty the stomach was reached. Being empty, the organ was completely collapsed, and the vault of the diaphragm was unusually high. For these reasons the anterior wall of the stomach could just be felt with the index and middle fingers, but after several attempts the stomach was exposed, and stitched to the skin, and on the 17th of November the third stage of the operation was performed by opening the organ with the thermo-cautery.

The subsequent history of this case was exactly the same as the foregoing one, so that it is not necessary to give details. The patient being a younger man gained strength more rapidly than W. H., and returned to his occupation on the 15th of January.

EPITHELIOMA OF ŒSOPHAGUS ON LEVEL OF BIFURCATION OF THE TRACHEA—GASTROSTOMY, ULCERATION OF TRACHEA, AND PERFORATION, FOLLOWED BY ACUTE BRONCHITIS AND DEATH FROM COLLAPSE ON FOURTH DAY.

The patient, H. P., aged 66, a warper, was admitted to the Glasgow Royal Infirmary on the 18th May, 1888. He stated that about six months previous to admission he became affected by a cough, which was spasmodic and very irritating, but unassociated with much expectoration. Up till the time of admission this cough has been present without cessation, and during the last three months the patient has had considerable difficulty in swallowing. This dysphagia has daily increased. At first, he experienced difficulty in swallowing solids, and afterwards in swallowing semi-fluid food, but now even simple fluids, such as milk or soup, pass into the stomach with difficulty. The patient has always enjoyed good health, has not suffered from specific disease, nor does he know of having sustained any injury to the gullet. On passing a bougie into the œsophagus, an almost complete obstruction was discovered, 14 inches from the teeth. On account of the situation of the stricture—viz., the bifurcation of the trachea—it was considered advisable to have a critical examination of the condition of the chest, in order to discover whether or not the obstruction might possibly be due to the pressure of an aneurism. I asked my colleague, Dr. Gemmell, to make a physical examination, and he assured me there was no positive evidence of aneurism. I then endeavoured to pass a small-sized bougie, and after some difficulty succeeded in pushing a No. 8 through the stricture. On the 13th of June the difficulty in swallowing had so increased that it was

evident that unless a radical operation was performed the patient would speedily succumb. After a consultation with my colleagues, it was agreed that gastrostomy should be performed immediately. I therefore operated in the same manner as in the foregoing cases, and nourished the patient by nutrient enemata and suppositories. After the operation the patient was able to swallow small quantities of milk without much difficulty. During the first 24 hours he seemed to gain strength, but on the second evening it was noticed that when he swallowed milk or other fluids, they immediately caused an attack of coughing, during which the food was expectorated. This change suggested rupture into the trachea, and prevented the administration of food by the mouth. On the third day after the operation symptoms of acute bronchitis developed, and the patient was so weak that little hope was entertained of his recovery, and on the fourth day he died from collapse, associated with considerable difficulty in breathing. At the *post-mortem* examination, an epithelioma of the œsophagus was found at the level of the bifurcation of the trachea. The surface of the growth was slightly irregular, and its lower and upper margins overlapped the healthy mucous membrane. The œsophagus was firmly adherent to the aorta, to the trachea, and to the bronchial tubes, and there was a rupture, large enough to admit the little finger, between the gullet and the left bronchus. This perforation was evidently of very recent origin, its edges being soft, irregular, and sloughing. No secondary formations were discovered.*

Remarks.—The last case described is of interest when taken in relationship with the two cases I showed at the seventh meeting of this Society, in so far, that the question as to the stricture of the œsophagus being possibly due to pressure by an aortic aneurism had to be considered and eliminated before the operation was performed.

In respect to the operation of gastrostomy, it is very important to operate in two stages, the first consisting of exposing and stitching the stomach to the parietes, the second of opening the stomach after firm adhesions have formed, so as to obviate the danger of the contents escaping into the peritoneum.

With reference to the first stage of the operation, a method a little different from that usually employed was adopted. The sutures did not include the peritoneum or muscular tissue, but, from the stomach wall, they passed through subcutaneous

* Pathological Museum of Glasgow Royal Infirmary, Series X, No. 210.

tissue and skin only, and were tied externally. By this arrangement a considerable surface of the stomach was left in contact with the *sides of the wound*; the two serous surfaces were not brought together, and so a broad and firm base for adhesion was secured. At the same time the formation of a complete sphincter was assured, as demonstrated by the cases shown. Regarding the second stage of the operation there is nothing worthy of note. The patients now wear elastic tubes always, and no fluid escapes, but if the tube be removed for a quarter of an hour, in either case, the fistula contracts and prevents the passage of the smallest quantity of the contents of the stomach, and so enables the patient to walk about with comfort. The sphincter action is therefore as good as could be desired.

In selecting cases for operation the surgeon is very often hampered by the patient refusing to have anything done until he is so reduced in strength that any serious operation must be attended with danger. Under favourable circumstances, and with due caution on the part of the operator, gastrostomy, when performed in two stages, should not be attended with much danger, but when the patient has allowed himself to reach the last stage of starvation before he seeks the aid of the surgeon, how can a favourable result be expected? The needles used were ordinary sewing-machine needles, round, and with an eye in the point. These were fixed on handles, and by heating in a spirit lamp were bent at an obtuse angle, and tempered by dipping in oil. The sutures were silk cord, boiled in carbolic wax. The advantage of using a round needle is, that it passes easily through the serous and muscular coats, and, when it reaches the more dense submucous layer, the difference in resistance is easily detected, and the danger of passing the suture into the cavity of the stomach is averted. It is difficult to say what part of the organ was exposed in the two successful cases, but in the other case, where the operation was performed in the same way, the sutures were found to include an area of the greater curvature of the stomach midway between the cardiac opening and the pylorus. It has been advocated by some surgeons that a double row of stitches should be inserted, but the disadvantage of unduly increasing the number of sutures employed is that the operation becomes very prolonged, and thereby the danger of death from shock is increased. One row of sutures is quite sufficient to keep the parts in apposition until adhesions form.

When the stomach has been empty for a considerable time, it is found to be situated to the left of the middle line, the

pylorus occupying a position close to the left margin of the rectus muscle, while the bulk of the organ is drawn up under the arch of the diaphragm. Consequently, in cases of stricture of the œsophagus, where the patient has been starved, the stomach is not to be looked for in its normal position.

RUPTURE OF THE UTERUS IN A CASE OF TWIN PREGNANCY.

BY THOMAS W. JENKINS, M.A., M.D., GEBÄRANSTALT, PRAG.

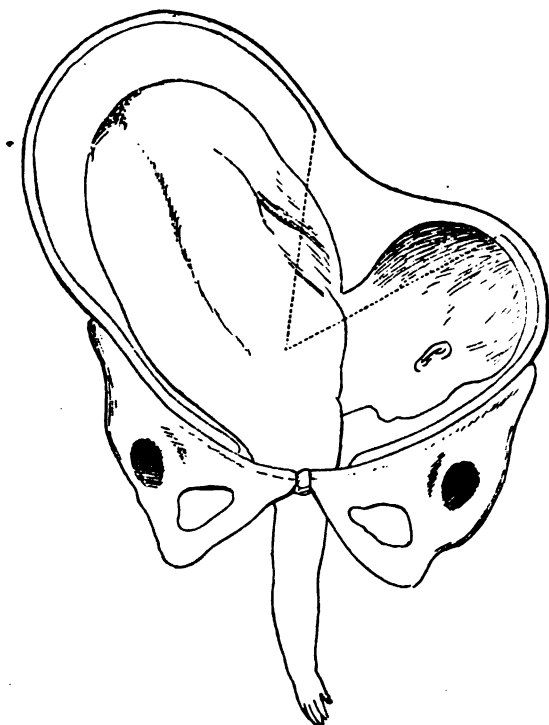
M. K., 3-para, was admitted into Professor Pawlick's Clinic in the Gebäranstalt, Prag, early on the morning of the 12th December, 1890. Seven hours before, she had given birth to a living child in her own home in the country. On account of her after condition, medical assistance was obtained, with the result that she was sent into the hospital.

The patient's general condition on arrival was good. External examination revealed great tenderness of the lower half of the abdomen. The transverse position of a second child was obvious. The right arm and the cord protruded from the vulva. Internal examination showed a first transverse position. There was no contraction of the pelvis.

The shape of the abdomen was peculiar. The fundus uteri was displaced to the right, and firmly contracted round the breech of the child. At first glance it seemed as if this was the right corner and not the fundus. At the level of the umbilicus, and almost in the middle line, was a considerable depression or groove which Dr. Slechter, Professor Pawlick's first assistant, who had entire charge of the case, was inclined to regard as the upper margin of the greatly elongated lower uterine segment. Further, in the middle line, rather more than a hand's breadth above the symphysis, was a circumscribed elastic tumour, resembling in every respect the distended bladder. No urine, however, followed introduction of a catheter.

The patient having been chloroformed, Dr. Slechter decapitated the child, using Braun's Schlüsselhaken. The body and head were removed without difficulty. The swelling just mentioned continued, but disappeared immediately after expulsion of the placenta. Dr. Slechter then introduced his hand into the uterus and found a large transverse rupture, situated 1 cm. beneath the level of the os internum, and involving the entire left half of the uterus. The peritoneum

was intact. Rupture, therefore, had occurred some time after the birth of the first child and prior to admission; and the peculiar swelling referred to was due to the projection of a part of the placenta between the margins of the tear. The position of the child and seat of the rupture are shown in the accompanying figure.



The only history that could be obtained was that, after the birth of her first child, four years ago, the patient had suffered from a parametritic abscess which burst externally, leaving a large cicatrix in the right groin. Her second labour, two years ago, was normal. During the last pregnancy she suffered much from abdominal pains. It is easy now to determine that considerable adhesions exist on the right side of the uterus.

Treatment consisted in washing out the cavity between the uterus and peritoneum with a solution of thymol, and removal of blood-clots. The uterus was then tamponed with iodoform gauze, the fundus being firmly pressed down by an assistant,

so as to approximate the margins of the wound. A large drainage-tube was also introduced.

It is remarkable that the patient exhibited no symptoms of shock: the pulse was good throughout; the tongue, however, very dry; nor were there any traces of hæmorrhage except the few blood-clots found between the uterus and peritoneum.

VIENNA, 12th January, 1891.—The following account of the puerperium has been sent to me by Dr. Slechter:—

“During the first five or six days a little blood came through the tampons. At no time did the patient complain of pain, nor were there any symptoms of peritonitis. Irrigation through the drainage-tube with a solution of thymol was made daily.

“The tampons and drainage-tube were removed on the tenth day, when involution of the uterus was found to be well advanced. On the left side was a soft parametric exudation.

“On the twentieth day the patient was dismissed ‘healed.’ The condition of the parts was as follows:—*Orificium externum* displaced to the left, and over it a granulating cavity of the size of a walnut; *orificium externum* displaced to the right and closed; uterus immovable, being bound down on the right side by old adhesions, while on the left side new and painless adhesions were forming round the granulating cavity; lochia normal.”

I am indebted to the kindness of Dr. Slechter for many details, and to Professor Pawlick for permission to communicate this case.

CURRENT TOPICS.

THE ANNUAL MEETING OF THE “GLASGOW MEDICAL JOURNAL.”—The Glasgow and West of Scotland Medical Association held its annual meeting in the Faculty Hall, on the 30th January, 1891, Professor M’Call Anderson, President, in the chair. The Editors’ report stated that the literary work of the *Journal* had gone on smoothly and satisfactorily during the year, and the Treasurer reported a fairly good balance on the year’s transactions in favour of the Association. It was felt desirable that an effort should be made to increase the membership of the Association, and with this object in view it was resolved to publish the list of subscribers in the March number, in order that gentlemen

taking the *Journal* might be enabled to make a personal effort among such of their friends as were not subscribers to join the Association. It was anticipated that subscribers, on looking over the following list, would miss many names which might be expected to be there, and it was thought that by personal appeal by the individual subscribers a considerable accession to the list might be obtained. The list of office-bearers for 1891, as printed below, was unanimously agreed to:—

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* The members are requested to look over this list, and to bring the *Journal* under the notice of any whose names do not appear, but who might possibly become subscribers.

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 David Yellowlees, M.D., Glasgow.
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THE PATHOLOGICAL AND CLINICAL SOCIETY.—The Society will hold its sixth ordinary meeting in the Faculty Hall, 242 St. Vincent Street, on Monday, the 9th inst., at 8 o'clock. The following cases and specimens will be shown:—Dr. George T. Beatson—a specimen of exostosis cartilaginea removed from the deep surface of the scapula at its upper angle; Dr. W. L. Reid and Dr. Joseph Coats—specimens of white infarction of the placenta in cases where the foetus was still-born; Mr. A. Ernest Maylard—a case of acute suppurative synovitis of the knee-joint, healed.

GLASGOW OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY—
ADDRESS BY MR. LAWSON TAIT.—The Society gave a dinner to their Honorary President, Mr. Lawson Tait, on Monday evening, 2nd February. Dr. Robert Park, President, occupied the chair. The dinner proved very enjoyable, and it is to be

hoped it may become an annual function. Afterwards Mr. Tait gave an address on the PRINCIPLE OF EXPLORATORY AND CONFIRMATORY INCISIONS to a fairly representative audience in the Philosophical Society's Rooms, Bath Street.

After thanking the Fellows for the honour they had done him, he proceeded in his usual characteristic and forcible style. He claimed that in 1701, in Glasgow or its neighbourhood, the first exploratory incision, so far as abdominal surgery was concerned, was made by Robert Houston. Houston extended the idea of tapping an ovarian tumour into that of an incision, and he was compelled by the exigencies of the case to completely remove the tumour, which he did successfully, the patient surviving the operation 13 years. The story of this case passed through William and John Hunter to John Bell, with whom Macdowell was a pupil in 1793. A suggestion of Bell's, that ovarian tumours would some day be successfully removed, was carried out by Macdowell in the backwoods of America.

Up to the year 1872 there was nothing practically attempted in abdominal surgery outside the removal of ovarian tumours. The fixed rule was that nothing was to be touched so long as the patient could get about, or until her life was acutely threatened. Between 1872 and 1878 many gynecologists revolted against this rule, and claimed the right of removing these tumours long before they threatened life, and also other tumours which made life a burden to the poor sufferers. In 1875 Mr. Tait formulated the proposal that "we were entitled to open the abdomen in all cases where there was disease present which threatened life or made it a burden, for the purpose of seeing in what direction the diagnosis could be made certain, and how the line of effectual treatment could be opened up." This, although a new doctrine as far as abdominal surgery was concerned, was nothing new in surgery. He dwelt strongly upon the great opposition that had been brought to bear against this proposal, which is known in America as "Tait's Law," and once more repudiated the statement which has frequently been made, that it means "when in doubt, open the abdomen." He alluded to the late Dr. Matthews Duncan as one who held to the traditions of the elders, and obstinately opposed operative treatment until the last moment. A titled metropolitan surgeon was also sharply criticised for his opposition to the new departure. He gave a number of cases to show the value of an exploratory incision; cases in which patients had been assured nothing could be done, but in which he had been able to relieve them completely.

An exploratory incision, he said, was "one in which, having done your best to make an exact diagnosis, you have honestly to say that you hesitate between two conditions, say between an ovarian tumour, which is pretty solid, and a soft oedematous myoma." He proceeded to show how, if you go prepared to do an ovariectomy and find you have to complete a hysterectomy, you may be handicapped by want of efficient preparation or provision of the proper instruments. Besides this, you will in all probability have been asked to give an estimate of the risk, and if you have given that estimate on the basis of belief that you are going to deal with an ovarian tumour, and you find you have to deal with a uterine myoma, you may have trouble afterwards. You confess, therefore, that you have to make an exploratory incision to clear up the doubt, and then you must be prepared for anything. As one becomes more skilled these incisions become fewer, while on the other hand confirmatory incisions become more common, and the latter are limited to a class of cases where the majority suffer from hopeless disease. As an example of a confirmatory incision, he quoted a case sent to him from London for the removal of what had been absolutely diagnosed as an ordinary ovarian tumour. His own diagnosis was that it was a large cancer of the omentum, and he gave an adverse opinion to the patient and friends. They were disposed to doubt the correctness of his opinion, so he proposed a confirmatory incision, which would at once settle the question definitely with practically no risk. They consented, and the diagnosis of cancer was confirmed. In cases where ascitic effusion with a fixed uterus is due clearly to papilloma, the confirmatory incision is a most valuable method of treatment, because evacuation of the fluid and subsequent drainage cures certainly one-third of them. In chronic inflammatory disease of the pelvis the principle of exploratory incision has proved most beneficial. He once more entered a strong protest against removing healthy appendages, which has so often been done in the past by the so-called Tait's operation.

He concluded by saying that the time has come when the older school of gynaecologists ought either to learn the facts of our new pathology and the powers of our new surgery, or to stand aside and for ever hold their peace.

On the motion of the President, seconded by the senior Vice-President, a hearty vote of thanks was awarded Mr. Tait for his address.

[The above account has reached us from official sources, and we have printed it as received. We, however, attended the

meeting at which Mr. Lawson Tait's address was delivered, and we feel in duty bound to place on record our sense of intense disappointment with the address in many respects. We quite agree with all that was said in favour of the principle of exploratory and confirmatory incisions; but we also think that Mr. Tait's object could have been quite well attained without the bitter personal attack which was made on the memory of the late Dr. Matthews Duncan. In this regard the address was in very bad taste, and we know that many of the gentlemen who attended the meeting agree with us in thinking so.]

POST-MORTEM EXAMINATION OF A "KOCH" CASE.—On the 18th February last, Dr. John Lindsay Steven performed a *post-mortem* examination of the body of a female patient, who had been subjected to Koch's method of treatment in the Glasgow Royal Infirmary by the sub-committee of the staff appointed for the purpose. The case was admitted to Dr. M'Vail's female ward as a case of ordinary phthisis pulmonalis with well marked physical signs. The injections produced most striking and peculiar temperature reactions, and as these tended to become more severe the injections were discontinued for a week or two before her death. The patient, we understand, received about eight injections in all, the highest dose administered being 5 milligrammes. The body was unusually well nourished, there being an exceptional amount of subcutaneous fat, and practically the only lesions observed were in the lungs, the upper lobes of both being riddled with cavities containing a thin yellow pus in large quantity, in which, at the time of the autopsy, were found very numerous tubercle bacilli. At the base of the right lung numerous areas of catarrhal pneumonia were present, evidently of recent date, and following the distribution of the bronchi. At the base of the left lung a few miliary tubercles appeared to be present. The liver, kidneys, and intestine presented healthy appearances, and no evidence of general or local tuberculosis in these organs could be found at the time of the *post-mortem*. The blood of the left ventricle contained no bacilli. Remarking upon the case to his students, Dr. Steven said that the *post-mortem* appearances were those of what, in ordinary conversation, might be called "galloping consumption"—*i. e.*, a very rapidly advancing tubercular consolidation and excavation of the lungs. Cases with quite as much excavation were not uncommon, but there was a suggestion of acuteness about this case which, taken along

with the very thin and fluid character of the contents of the cavities, was rather unusual. In estimating the effects of Koch's liquid in the case, it was, therefore, necessary to take into account the clinical history. If this were an ordinary case of phthisis pulmonalis, not advancing with any very great rapidity, then it certainly seemed as if the fluid had induced acute processes in the lungs, the acuteness of the local processes being evidenced by death having occurred before secondary tubercular lesions could be set up in other organs—*e.g.*, the bowels—or even before any very great emaciation had taken place. It seemed to him that the *post-mortem* taught several lessons:—

1. That Koch's fluid was an agent of the greatest power, and one which exercised that power in the most striking way upon tubercular tissue.

2. That in all cases of phthisis pulmonalis which were at all advanced, *and at the same time advancing*, as might be known by observation of the symptoms and temperature, Koch's fluid should never be used.

3. He did not mean to say, however, that Tuberculin was never to be used in advanced cases. If the advanced case were quiescent, if the evidence tended to show that cavities were not extending, that cicatrisation was probably going on, and that caseous foci might perhaps be undergoing calcareous change (conditions which might be judged of by the absence of hectic and urgent symptoms, and by a careful study of the physical signs), then it was not unlikely that Koch's fluid might be used with a reasonable hope of hastening curative processes. In the course of his investigations he believed he had seen evidence of this.

ST. MUNGO'S COLLEGE MEDICAL SOCIETY—ANNUAL DINNER.
—The annual dinner took place on the evening of Thursday, 12th February last, in the Alexandra Hotel, Bath Street, the Honorary President of the Society, Dr. John Lindsay Steven, being chairman, and Dr. R. H. Parry and Mr. E. R. Pollard, croupiers. A company of nearly fifty sat down to dinner, among whom were Drs. H. E. Clark, John Glaister, M'Vail, J. K. Kelly, E. Borland, John Brown, Charles Workman, and Boothman. The Chairman, in proposing the toast of the St. Mungo's College Medical Society, alluded in complimentary terms to its present satisfactory and successful condition, the present session, indeed, being one of the most successful that the Society has ever had. No less than sixty members were entered this year on the books of the Society, and, as the

result of the very successful concert held in December last, forty volumes, of great interest and value as works of reference, had been added to the Students' Library. All this was extremely gratifying, and could not fail to have a beneficial influence on the School of which the Society formed a very important part. Speaking of the relationship of the Society to St. Mungo's College, Dr. Steven threw out a hint to the effect that, if arrangements could be made whereby an elected representative from the teaching staff of the College could be sent as a member to the Board of Governors, a great advance in the welfare and success of the institution would be achieved. Mr. E. R. Pollard suitably replied to the toast, after which a very pleasant evening was spent.

GLASGOW UNIVERSITY STUDENTS' DINNERS.—The annual dinner of the fourth-year medical students was held in the Bath Hotel, on the evening of Tuesday, the 17th February. The chair was occupied by Professor M'Call Anderson, who was accompanied by Professor Gairdner, Dr. Joseph Coats, Dr. H. C. Cameron, and Dr. Samson Gemmell. The toast of "The University" was proposed by Mr. Neil Campbell, and replied to by Professor Gairdner in a speech which referred to recent proposals of reform in the Universities. The best speech of the evening was that made by Mr. Lochhead in proposing "The Ladies." A feature of the dinner was the menu-card, in which various incidents of student life were depicted, from the medical ball to the afternoon snooze on the benches by indifferent students. Many songs enlivened the evening.

The annual dinner of the first-year medical students took place on the evening of 18th February last, in the Windsor Hotel, and was attended by about fifty persons. Professor Bower, B.Sc., occupied the chair, Mr. J. F. Gemmill, M.A., was the croupier, and among the other gentlemen present were Dr. J. Yule Mackay, Mr. R. Bell, M.B., C.M.; Mr. Benjamin G. Cormack, B.Sc., assistant to the Professor of Botany; Mr. J. Taylor, Mr. W. Grove, Mr. J. Brownlee, M. A.; Mr. A. R. Anderson, Mr. G. G. Henderson, D.Sc.; Mr. J. C. Robertson, M.A.; and Mr. D. F. Harris, B.Sc. Dr. Mackay, in responding to the toast of the "Alma Mater," said that Glasgow University held one of the highest places among the universities of the country, and its medical school was second to none in the world. The other toasts were "The Students' Representative Council," "First-year Medicals," "The Ladies," and "Sister Universities."

MEMORY—LOISETTE'S SYSTEM.—We have to inform our readers that arrangements are being made to give a course of lectures in the St. Andrew's Halls on this system of aiding memory. The fee to be charged is a very small one, and those who have to depend on their memory a good deal may find something of service to them in the lectures. Some particulars of the system may be found in our advertising pages.

ADMISSION OF WOMEN STUDENTS TO THE EDINBURGH ROYAL INFIRMARY.—We are officially informed by Mr. J. S. Trainer, treasurer and secretary of the Royal Infirmary, that the managers have resolved to admit women students of medicine to the Royal Infirmary; and it was accordingly remitted to the medical and surgical staff to give effect to the decision arrived at, which was as follows:—(1) Ward visits and clinical lectures shall be given to female students separately from the male students; (2) Mixed clinics may be allowed (on the choice of the lecturers) on special subjects, such as eye, ear, throat, and skin; (3) That under no circumstances whatever shall any ward be utilised twice in the same day for clinical instruction; (4) That, as far as possible, no interference shall be attempted with ward clinics and lectures already arranged for male students; (5) That at present, or till their numbers exceed thirty, the women students shall keep together in one unit for clinical instruction, thus requiring only one ward or theatre for their instruction at any given time; (6) All women students, before receiving their hospital tickets, must sign a declaration that they will conform to the special rules made by the managers for their instruction.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.—The Surgical Essay Prize of thirty-five guineas has been awarded by the College to Mr. Harold Jalland Stiles, M.B., F.R.C.S.E., 5 Castle Terrace, Edinburgh, for his essay on "Contributions to the Development, Anatomy, Pathology, and Surgery of the Breast." The prize was open to all Licentiates and Fellows of the College, except Fellows who were members of the President's Council, and candidates had the selection of any surgical subject.

VIRCHOW TESTIMONIAL FUND.—On the 13th October, 1891, Professor Rudolph Virchow celebrates his seventieth birthday. His pupils and admirers intend to commemorate this occasion by presenting him with a testimonial in recognition of his

splendid services to medical science. A large and representative Committee has already been formed in Germany with the view of collecting the necessary contributions, but it has been felt that this ought essentially to be an international movement, inasmuch as Professor Virchow's followers are not of one nation, but of all.

In accordance with this view a Committee has been formed in order to give Professor Virchow's British admirers the opportunity of testifying to the gratitude which every member of the profession feels towards the man whose work in "Cellular Pathology" has so greatly contributed towards the advance of modern medical science, and may fairly be said to have made every member of the profession his pupil.

The form in which the universal feeling of gratitude is to find expression has been decided upon by the original German Committee. A large gold portrait medal is to be presented to Professor Virchow himself, and bronze replicas of the same to members of his family and to some scientific institutions. The surplus—which, no doubt, will be large—is to be handed over to Professor Virchow for the furtherance, subject to his decision, of scientific work.

To carry out this project a Committee has been formed, and they cordially invite the co-operation of the profession in the United Kingdom. Subscriptions, which are not to exceed two guineas, may be sent to the Hon. Treasurer, Dr. Lauder Brunton, 10 Stratford Place, London, W., and will be duly acknowledged in the medical journals. Cheques to be made payable to "Virchow Testimonial Fund," and to be crossed.

The Committee consists of the following:—Sir James Paget, Bart., *Chairman*; Dr. Lauder Brunton, *Hon. Treasurer*; Mr. Felix Semon, and Mr. Victor Horsley, *Hon. Secretaries*; Henry W. Acland (Oxford), Th. Clifford Allbutt, John Banks (Dublin), W. Mitchell Banks (Liverpool), H. G. Barling (Birmingham), A. Barron, M.B. (Liverpool), J. S. Bristowe, M.D., W. H. Broadbent, Th. Bryant, H. T. Butlin, J. Chiene (Edinburgh), Andrew Clark, J. Coats (Glasgow), S. Coupland, J. Dreschfeld (Manchester), Dyce Duckworth, John Evans, Joseph Fayrer, D. Ferrier, W. H. Flower, M. Foster (Cambridge), W. T. Gairdner (Glasgow), Alfred Garrod, W. S. Greenfield (Edinburgh), F. de Haviland Hall, D. S. Hamilton (Aberdeen), T. Holmes, G. M. Humphry (Cambridge), J. Hutchinson, J. Hughlings Jackson, William Jenner, George Johnson, Joseph Lister, William MacCormac, Th. Oliver (Newcastle-on-Tyne), W. M. Ord, Richard Quain, George Paget (Cambridge), F. W.

Pavy, George Porter (Dublin), R. Douglas Powell, J. Russell Reynolds, William Roberts, Ch. S. Roy (Cambridge), T. Burdon Sanderson (Oxford), E. A. Schäfer, S. G. Shattock, John Simon, A. R. Simpson (Edinburgh), E. M. Skerritt (Clifton, Bristol), Th. Grainger Stewart (Edinburgh), William Stokes (Dublin), Octavius Sturges, Th. Pridgin Teale (Leeds), William Turner (Edinburgh), Hermann Weber, Spencer Wells, C. S. Wheelhouse (Leeds), Samuel Wilks, A. H. Young (Manchester).

SEVENTH INTERNATIONAL CONGRESS OF HYGIENE AND DEMOGRAPHY.—This meeting will be held in London on August 10th-17th, 1891, under the Presidency of H.R.H. The Prince of Wales, K.G. A preliminary programme has been forwarded to us, in which the following sections, as at present arranged, are given:—

DIVISION I.—HYGIENE.

I. PREVENTIVE MEDICINE.—*President*, Sir Joseph Fayrer, K.C.S.I., M.D., F.R.S.

II. BACTERIOLOGY.—*President*, Sir Joseph Lister, Bart., F.R.S.

III. RELATION OF THE DISEASES OF ANIMALS TO THOSE OF MAN.—*President*, Sir Nigel Kingscote, K.C.B., Chairman of the Board of Governors of the Royal Veterinary College; *Vice-Presidents*, Professor G. T. Brown, C.B., Director of the Veterinary Department of the Board of Agriculture, and E. Klein, M.D., F.R.S., Lecturer on Physiology at St. Bartholomew's Hospital.

IV. HYGIENE OF INFANCY AND CHILDHOOD.—*President*, J. R. Diggle, Chairman of the London School Board; *Vice-Presidents*, W. B. Cheadle, M.D., F.R.C.P.; Professor Gladstone, and Sir Philip Magnus.

V. CHEMISTRY AND PHYSICS IN RELATION TO HYGIENE.—*President*, Sir Henry Roscoe, M.P.; *Vice-Presidents*, Sir Charles Cameron, F.R.C.S., D.P.H.; W. J. Russell, Ph.D., F.R.S., and Lieut.-General R. Strachey, R.E., C.S.I., F.R.S.

VI. ARCHITECTURE IN RELATION TO HYGIENE.—*President*, Sir Arthur Blomfield, M.A., A.R.A.; *Vice-Presidents*, Professor T. Hayter Lewis, F.R.I.B.A., and Percival Gordon Smith, F.R.I.B.A.

VII. ENGINEERING IN RELATION TO HYGIENE.—*President*, Sir John Coode, K.C.M.G.; *Vice-Presidents*, Alex. R. Binuie, M.Inst.C.E.; H. Percy Boulnois, M.Inst.C.E.; Professor Henry Robinson, M.Inst.C.E., and Major Hector Tulloch, R.E.

VIII. NAVAL AND MILITARY HYGIENE.—*President*, The Right Hon. Lord Wantage, K.C.B., V.C.; *Vice-Presidents*, Director-General J. N. Dick, C.B., M.R.C.P.; Director-General W. A. MacKinnon, C.B.; Surgeon-General J. A. Marston, C.B., M.D., and Professor J. L. Notter, M.D.

IX. STATE HYGIENE.—*President*, The Right Hon. Lord Basing; *Vice-Presidents*, H. E. Armstrong, President of the Society of Medical Officers of Health; Sir Albert Rollit, M.P., and R. Thorne Thorne, F.R.S., M.B.

DIVISION II.—DEMOGRAPHY.

I. DEMOGRAPHY, HEALTH STATISTICS AND INDUSTRIAL HYGIENE.

TENTH GERMAN CONGRESS FOR INTERNAL MEDICINE.—We have been requested to inform our readers that the tenth "Congress für innere Medicin" will be held in Wiesbaden from the 6th to the 9th April, 1891. Professor Leyden, of Berlin, will be president. The following discussions are to be held:—The Diseases associated with Gall-stones, on Monday, 6th April, introduced by Naunyn, of Strassburg, and Fürbringer, of Berlin; Koch's Treatment in Pulmonary Tuberculosis and other internal Tubercular Diseases, on Tuesday, 7th April; Angina Pectoris, introduced by A. Fraenkel, of Berlin, and O. Vierordt, of Heidelberg, on Wednesday, 8th April. Besides these discussions, a long list of communications has already been announced. Dr. E. Pfeiffer, Friedrichstrasse, Wiesbaden, is secretary, from whom information may be obtained.

"BIBLIOTHECA MEDICO-CHIRURGICA."—We have pleasure in bringing this very useful compilation, published by Vandenhoeck & Ruprecht, of Göttingen, under the notice of our readers. This index of current literature is exceedingly cheap, costing only 6 marks (shillings) yearly, and it is of the greatest service to those who have frequently to look for references.

SOME soaps contain only one-sixth part soap, said Dr. Brown, editor of the *Hospital Gazette*, to an audience in which were soap makers, at the Balloon Society; some are one-sixth to one-third sugar, others one-fourth to nearly half water, and yellow, primrose, and transparent soaps are made with resin, because it makes the soap cohere, shine and lather freely. Brown Windsor, castile, mottled and curd soaps, are uniformly alkaline, as well as most of the high and low-priced soaps. Glycerine, honey, and sulphur soaps, are mostly distinguished by an absence of the supposed admixture. Soaps are "silicated," "highly salted," and otherwise doctored. On all sides rancid impure fats are used to make them, and strong scents added afterward to disguise the bad smell. Modern advances were enumerated, such as milling, superfatting, etc., and Vinolia Soap cited as embodying these improvements. The lecture elicited much discussion, and a motion made to regulate by legislation the manufacture and sale of soap (and thus restrict adulteration), was carried notwithstanding strong opposition from the soap makers present.

CORRESPONDENCE.

"ON A CASE OF PULSUS BIGEMINUS OR CARDIAC COUPLE-BEAT, COMPLICATED BY A QUADRUPLE AORTIC MURMUR."

To the Editors of the "Glasgow Medical Journal."

DEAR SIRS,—I read with much interest, and with an equivalent amount of disappointment, the case recorded in your current issue under the above heading, by Dr. J. Wallace Anderson. The case, no doubt, attracted and received much, though apparently not altogether well directed, attention, but that it should have been presented in such an incomplete form, especially when it is sought to build upon it a theory to explain the phenomenon in question, is to my mind a matter for regret, and I hope to express this regret in no uncertain terms.

"Couple-beat" is not a very well chosen term, and I would suggest instead "double beat." It is true the beats run in couples, but the one succeeds the other, and both are produced by the same ventricle; whereas the two sides of the heart are more directly coupled than any two beats of one ventricle. Bigeminus is also objectionable as applied to the pulse, because the beats do not occur in double pairs. We might speak of the bigeminate contractions of the two ventricles, but when speaking of the expansion of the arteries, *pulsus geminus* would be more correct.

This double beat, occurring regularly for any lengthened period, is, as Dr. Anderson says, "a comparatively rare phenomenon," but an occasional double beat is among the common events of cardiac pathology; in fact, it would be a strange event to watch a case of mitral stenosis for even a short period without discovering its presence. In that lesion it perhaps occurs more frequently than the A.S. murmur. Its occurrence is not limited to cases of mitral stenosis, but the conditions, which I hope to enunciate further on, that give rise to this phenomenon are more fully and more constantly developed in this disease than in any other, and hence its frequent association with this lesion. The knowledge of this fact has caused me to be much astonished at the manner in which Dr. Anderson ignores, so far as the condition of the patient when under his care was concerned, the important item in the history of the case, that mitral stenosis had been at one time diagnosed. We are told that in May, 1885, Dr. Wood Smith reported concerning this patient's heart:—"No increase of cardiac dulness;

apex beat in fifth interspace. There is a distinct thrill felt over the apex. On auscultation, a loud, coarse A.S. mitral murmur is heard, and also a softer V.S. mitral murmur." This diagnosis is not to be lightly brushed away or ignored. In my experience the A.S. murmur may disappear, but such cannot be often said of the lesion. In the present day there should be very little difficulty in diagnosing mitral stenosis without any murmur, and in my opinion those who cannot do so will often fail to recognise the presence of that important lesion until they discover it on the *post-mortem* table, and then it is rather too late, so far as the patient is interested in the matter. I think, therefore, Dr. Anderson should have told us whether there was any mitral stenosis present or not when the case was under his care, and if so, what bearing it had upon the condition of the patient. Failing any such explanation, I feel bound to accept the diagnosis of Dr. Wood Smith, and would like to add my own surmise that when the patient was under Dr. Anderson's care the mitral constriction was very considerable. This is borne out by the fact that the pulse was infrequent, small, slow, and of rather high tension, notwithstanding the other fact that there was also aortic regurgitation.

There were loud aortic systolic and diastolic murmurs. "The systolic is best heard over the second right costal cartilage, and is so loud there that it can be heard while the ear is still an inch or two from the stethoscope," but, strange to say, it was only carried "faintly to the root of the neck," although that is not much more than two inches from the aortic cartilage. The systolic murmur could "be traced even into the axillary region, so that here there is possibly in addition a mitral element in the murmur." This is all the information Dr. Anderson vouchsafes respecting the mitral orifice, and in fact if the patient had not happened to have been previously under the care of Dr. Wood Smith, we would have been left in total ignorance in the matter. The character of the pulse may, I think, safely enable us to dispose of any idea of there being either free aortic or mitral regurgitation. "The cardiac dullness, however, is increased a little to the left and downwards, and the apex beat is felt in the sixth interspace, immediately beyond the vertical nipple line." This is not the condition which is found in uncomplicated cases of mitral stenosis, but here there was also a prolonged history of mitral regurgitation, and a more recent history of aortic incompetency; and even though the regurgitation may not have been very free at either opening, yet the conditions were

such as give rise to dilated hypertrophy of the left ventricle. We are not told whether there was any extension of dulness in the direction of the left auricle, and a similar silence is maintained regarding the right side of the heart.

Dr. Wallace Anderson's explanation of the quadruple aortic murmur is no doubt the correct one, but I shall not have the same opinion to express when I come to deal with his views as to the cause of the irregular rhythm.

"When the cardiac beat is single, patient feels in better health (comparative freedom from stomach disorder)." I would rather reverse this mode of expression, and it is even more important that Dr. Anderson should do so, as he seems to look upon it as a sequence, the stomach disorder being the cause. "There was undoubtedly a very close relationship between the dyspepsia and the allorhythmia. The former preceded the first discovery of the disturbed rhythm by forty-eight hours, and the latter as surely began to pass away as the stomach symptoms became less and less marked."

"I believe this disturbed rhythm belongs, like functional palpitation, to the *spasmi*; that it is purely a neurosis, a disorder of innervation." This is really very plausible, and very nice, but he might as well have said, "I believe that this disturbed rhythm is due to some functional nervous disorder, about the intimate nature of which I know nothing." Neurosis, like a good many other medical terms, is merely a cloak for ignorance. In the present state of our knowledge I would be very sorry to see the word abolished; it is euphemistic, and, like the word Mesopotamia to the old lady, it serves as a sort of unction to our souls, but it would be as well for us to recognise the fact that it has got very little definite signification. With Newton I think we should admit no more causes of natural things than such as are both true and sufficient to explain their appearance. When I can find a natural cause for a natural event, or at least trace a natural sequence, I do not care to invoke any unknown agency in the form of a neurosis. I may be told that the mechanical theory, which I have taught for some years, to explain the peculiar rhythm in question requires the interposition of a nervous agency; that one ventricle initiating contraction in advance of the other shows that it has earlier received a discharge of nervous energy, or that perhaps it is more sensitive than the other. I can retort that these nervous discharges are none other than those which are constantly taking place, and the fact that one ventricle receives its impulse in advance of the other is due to the earlier mechanical stimulation which evokes it. Moreover,

the right side of the heart is more sensitive to stimulation than the left side, and the right auricle can be readily made contract for some hours after the rest of the heart has ceased to beat. In my writings on this subject I have taken full cognizance of cardiac innervation, but the irregular discharges are brought about by a disturbed balance of blood-pressure in the two sides of the heart. This peculiar rhythm is more frequently associated with mitral stenosis than with any other disease. It is also found in cases of bronchitis, emphysema, and cardiac failure from any cause; it is often observed in gouty patients with high arterial tension, and may be induced by digitalis. In my papers on mitral stenosis in the *Liverpool Medico-Chirurgical Journal*, July 1886, and July 1887, I dealt with the causation of this phenomenon, but even at the risk of somewhat wearisome reiteration I may be allowed to give a long abstract from the latter article:—

“In all obstructive cardiac lesions, the effect tells backwards in the course of the circulation; therefore, in mitral stenosis the cavities first affected are the left auricle and right ventricle, which tend to become hypertrophied and dilated. There is also engorgement of the right auricle, of all the viscera, and of the whole venous system. On the other hand, the left ventricle remains a comparatively small cavity, and consequently can only throw a small quantity of blood into the aorta at each systole. This small supply to the arterial system does not demand a great holding capacity, so all the systemic arteries become contracted, and thus the arterial tree is diminished, while at the same time the venous engorgement prevents a free outlet through the capillaries and arterioles, and thus the arterial tension is raised. We have thus high pressure in both circuits, but it is relatively greater in the pulmonic circuit in proportion as the obstruction is comparatively greater and the area smaller. Again, we have a comparatively large right ventricle and a small left; the former contains more blood, and therefore tries to discharge more at each systole, but of course in a given time no more blood can pass through the right ventricle than that which leaves the left, therefore the extra effort of the right is used up in maintaining high pulmonic tension, which with the aid of the left auricle drives the blood forcibly through the narrowed mitral orifice during diastole. The very high pulmonic tension and overloading of the right ventricle often tends to prolong the contraction of the right ventricle beyond the short sharp and effective systole of the left, and thus we get asynchronism in the closure of the two sets of arterial valves, with consequent

doubling of the second sound. The large distended right ventricle never completely empties itself during systole, and frequently the discharge is so slight that it is again quickly distended, and thus initiates contraction, which is propagated to the left ventricle before it is full. This initiation may get so far ahead of the left ventricle that the systole of the latter may be induced, before it contains much more blood than is sufficient, to raise the aortic semilunar valves, and thus we may have one or more abortive pulsations in the downstroke of the sphygmographic tracing. This goes on till the right ventricle has disposed of its superfluous charge of blood, and then the rhythm may become quite regular until it is again over-distended. This over-distention of the right side, with initiation of contraction in advance of the left, in some cases takes place in a regular rhythm, so that we get the pulsus bigeminus, trigeminus, &c. This action of the right ventricle is in my opinion the cause of the disturbance of the cardiac rhythm with irregularity of the pulse which takes place in mitral stenosis, but although I briefly and clearly stated this view in my previous report, I have not seen it adopted by any other writer. However, I am content to leave it to future judgment.

"This irregularity in the cardiac rhythm is most frequently associated with mitral stenosis, though it may occur under any circumstances where there is disturbed cardiac innervation, and one ventricle initiates contraction in advance of the other, whether that disturbance arise from mechanical causes, as in the case of mitral stenosis, or be due to some fault in the innervation. The following pulse tracing is taken from a lady who has had an intermittent pulse for many years, and who at the time this tracing was taken was suffering from slight cardiac failure. There was no valvular disease.

"In my experience it has invariably been the right ventricle which initiated contraction. The sequence of events may be briefly described as follows:—Starting with a forcible contraction of the left ventricle, which is evidenced by a strong apex impulse, loud mitral first sound, strong pulse, and well-marked aortic second sound, this full discharge well fills the arterial tree, keeps the arteries full between the beats, and produces a very gradual down stroke in the sphygmogram. The contraction of the right ventricle which accompanies this complete systole of the left may only partially empty its distended cavity. Its first and second sounds are synchronous with those of the left side, but less pronounced.

"The partially emptied right ventricle is quickly recharged,

initiates contraction which is propagated to the left ventricle. In this case the systole of the right ventricle is the most powerful, its impulse strongest, and sounds loudest. The left ventricle contracts on a small quantity of blood, which may be barely sufficiently to raise the aortic valves, thus producing a very abortive pulsation in the down stroke, or it may be enough to raise the lever of the sphygmograph to its normal height and maintain the ordinary pressure in the arteries. The right systole may keep in advance of the left for several cardiac cycles, so that you have an equal number of beats recorded in the sphygmogram before the lever reaches the base line. When this partial asynchronism occurs in cases of mitral stenosis, the left ventricle, while beginning its systole last, usually ends first, and so you get doubling of the second sound. Doubling of the first sound does not so frequently occur, because, although the right ventricle starts contraction, the left more quickly applies tension to its valve, and so the right and left first sounds get merged. When this peculiar cardiac rhythm arises in more direct connection with the innervation of the heart, or from commencing failure of the right ventricle, then doubling of the first sound is a matter of common occurrence, while the more equal supply of blood to the two ventricles assimilates the duration of their contraction, and so doubling of the second sound is less frequently observed. When there are murmurs, it will be found that their respective intensities are associated with the more powerful contractions of each side.

"This peculiar cardiac rhythm, with corresponding irregularity of the pulse, is increased by digitalis and caffeine, and lessened by nitro-glycerine and atropine. I have also seen decided benefit in some cases from a combination of ammonia and nux vomica, especially when there was much bronchial secretion attending the heart mischief."

I could readily explain Dr. Anderson's case on the above theory, but it is sufficient for my purpose to show that, as recorded, the case is of very little value. Now for one shot more before we part. Dr. Anderson reminds us "that while all forms of valvular disease may spare longer than was till lately supposed, when aortic regurgitation does strike, there is but one way." I have shown that there could not have been much aortic regurgitation, and the exact part which it played in causing the man's death has not been very clearly established.—I am, Dear Sirs, yours faithfully,

JAMES BARR.

LIVERPOOL, *February, 1891.*

REVIEWS.

Diabetes: Its Causes, Symptoms, and Treatment. (No. 8 in the Physicians' and Students' Ready Reference Series). By CHARLES W. PURDY, M.D. Philadelphia and London: F. A. Davis.

WRITTEN in the United States, and dealing with certain features of diabetes from a purely local standpoint, this volume will still be read with interest on both sides of the Atlantic. It does not profess to give an exhaustive discussion of the scientific aspects of its subject, but rather to furnish in a handy form, available for ready reference, a statement which will include all essential points and the most recent information upon them. This object we believe to have been attained; and, while criticising it in certain particulars, we would gladly acknowledge the general excellence of the work.

Special care has been devoted to the section upon "Historical, Geographical, and Climatological Considerations of Diabetes Mellitus," and Dr. Purdy, after a study of such statistics as have been available from the individual States of America, concludes that cold and high altitude may be regarded as factors in the etiology of diabetes. As to the vexed question of the comparative mortality from this disease in rural and in urban districts, he finds that in cold districts the rural population chiefly suffers, while it is the reverse in the warmer parts of the country.

The second section is devoted to "Physiological and Pathological Considerations," and it seems unfortunate that it should not have been arranged to immediately precede that on Morbid Anatomy, which comes fourth, a section on Etiology intervening, which would more naturally have been allowed to follow the climatological discussion just alluded to. In the references to the various views held upon glycogenesis and the pathology of diabetes, there is, too, a want of that clearness of statement which characterises the other chapters. Special stress is laid upon the influence of pancreatic disease: the recent experiments of v. Mering and others, in which diabetes mellitus followed extirpation of the pancreas, are quoted; the functions of the pancreatic ferment are fully discussed; it must surely be unintentionally that no account is taken of the changes in the coeliac plexus recorded elsewhere in similar cases. As regards the anatomical changes in other organs, the recent statistics which are given in respect to the *heart* are

striking, as it seems that in about 15 per cent distinct alterations are there present, the essential feature of which is enlargement, chiefly of the left ventricle. There is no mention made, however, as to whether this cardiac enlargement had nephritic lesions associated with it or not.

The account of the symptoms, complications, diagnosis, and prognosis, is at once full and concise. Among the various test solutions mentioned, preference is given for that used in the "author's quantitative method," in which caustic potash and strong ammonia are both present, along with sulphate of copper, some glycerine also being added, and the proportions are such that 30 c.c. are reduced by $\frac{1}{4}$ grain of sugar.

The question of treatment is entered into in considerable detail. Prophylactic measures are suggested—such as the choice of the most suitable occupations and residence for those known to be hereditarily predisposed. But special stress is laid upon dietetics, and the various restrictions to be adopted by patients whose disease is more or less serious are stated very clearly. The result of an analysis of a long list of beverages is given; coffee, which is usually included among the drinks suitable for diabetics, is condemned as containing often 10 per cent of sugar; among wines, certain native American wines are said to be almost non-saccharine.

Medicinal treatment is regarded as of secondary importance; still, it has not been overlooked, a very fair and impartial note being made of all the most recent published results. Inhalations of oxygen are favourably spoken of, and two cases are quoted in full in which, under their use, the sugar disappeared from the urine. The benefit from these inhalations is considered analogous to that derived from living near the sea-level. Advantage is hoped to be obtained from oxygen inhalations in diabetic coma, but opportunity had not occurred for testing their usefulness in the treatment of that complication.

Illustrative cases of the various types of diabetes are given from Dr. Purdy's practice, with quantitative analysis of the urine and notes of the treatment, dietetic, climatic, and medicinal.

The concluding section, which is devoted to Diabetes Insipidus, does not call for special remark.

Transactions of the Edinburgh Obstetrical Society. Vol. XV.
Session 1889-90. Edinburgh: Oliver & Boyd.

OBSTETRICS and Gynæcology are rapidly passing out of the astrological into the astronomical stage of Science, and the Edinburgh Obstetrical Society are having, as they have had,

no small share in promoting the transition. This volume of their transactions is even more than usually full of careful anatomical and clinical observations that will be of permanent value. It is a hopeful sign, also, for the future of this department, that so many of the younger members of the Society are engaged in scientific work.

Dr. J. W. Ballantyne contributes two exhaustive papers, one on a case of Intrauterine Rickets, in which the rachitic changes were far advanced, and the other giving a very complete account of the Head of the Infant at Birth.

Dr. Haultain also contributes two papers. The first is on a case of Exfoliation of the Bladder in the Female. In this, he gives references to 34 cases, including his own. In 13 of these the exfoliation occurred after labour, in 20 from retroversion of the gravid uterus, and in one from impaction of the foetal head previous to labour. The exfoliated part in Dr. Haultain's case consisted of both the mucous and the muscular walls of the bladder, and at one part a piece of the peritoneum was attached. He considers that in most cases of so called croupous inflammation of the bladder the same thing occurs, and the condition of the bladder wall left is therefore a point of great interest.

The other paper by Dr. Haultain is one of great importance on the Morbid Anatomy of the Fallopian Tubes. In this, he demonstrates the fact that subinvolution produces a contortion, and consequently a sacculation, of the tubes which disposes to the formation of hydro- and pyo-salpinx, when inflammation of the mucous membrane supervenes.

There are also two very suggestive papers on Heart Disease, (1) in Pregnancy and Labour by Dr. Mackness; and (2), in its relation to Pelvic Lesions by Dr. Williams. These are of more than merely sectional interest, and bring out the striking fact that mitral lesions, and especially mitral stenosis, are more frequent in the female, while aortic lesions are more frequent in the male.

Perhaps, however, the two papers on Electricity in Gynecology, by Drs. Fraser Wright and Milne Murray, are the most important in the volume, and should be read by all who are interested in the subject. They will greatly aid in defining the proper position of electricity in the treatment of pelvic disease. Hitherto we have had far too much vague statement with regard to it, one section of gynecologists expressing unqualified approval and another unqualified disapproval, without any sufficient data being produced by either. In these two papers, however, we have the results of 68 carefully

observed cases in which the diagnosis was generally satisfactorily made before the treatment began, and in which the current employed, the mode of its application, and the results have been carefully recorded. The general outcome from these cases seems to confirm most of Apostoli's statements, and especially the relief afforded to the symptoms of fibroid tumours, even while the tumour itself may remain almost unchanged. The favourable results of Apostoli's treatment in hæmorrhagic endometritis, in subinvolution, and in pelvic cellulitis are also very decidedly confirmed. Indeed, the proper sphere of electricity in this department seems to be assuming more definite outlines than seemed probable three or four years ago. It is to be noted, however, that neither of the Edinburgh gynæcologists has pushed his treatment so firmly as Apostoli, and this may explain their failure to effect all that Apostoli asserts he does.

Among these cases, as among those of the Keiths and of Apostoli, we observe cases of uterine polypus treated by the galvanic current while the tumour was sloughing out of its bed. We cannot but consider that such cases would be much more safely, as they would be much more speedily, treated by ordinary surgical methods.

Space fails us to refer to the many other contributions in this volume, and the valuable discussions to which they gave rise. The Edinburgh Obstetrical Society evidently gives itself seriously to work, and we may regret that in the West of Scotland we are still unable to produce any similar record.

A System of Practical and Scientific Physiognomy, or How to Read Faces. By MARY OLMSTEAD STANTON. Two Volumes. Profusely Illustrated. Philadelphia and London: F. A. Davis. 1890.

PHYSIOGNOMY is a study which possesses a very wide general interest, and a very special interest to practising physicians and surgeons. The writings of Lavater, giving the results of his study of the human face, have everywhere been read with great interest, but according to the present author, although he had the power of reading the human face intuitively, "he has left among his writings no rules nor principles by which students can learn this science." To her has been left the work of placing physiognomy on a truly scientific basis, and the result has been the production of an extraordinary and ponderous book, consisting of two very large volumes. The scientific value of the book, however, is doubtful. The author

seems to have little power of concentration, and indulges all through in verbosity, which, to the reader accustomed to scientific classification and conciseness of statement, is most confusing and irritating. In a work of about one-fourth of the size, all that is essential in her subject could have been stated, and stated in a fashion calculated to be of much greater service to those interested in the subject on which she has so voluminously and tediously written. While most will admit that much may be learned from a study of the face with regard to the nature and constitution of the individual, many will be inclined to doubt the accuracy of the "*discoveries* in this system of physiognomy." Here is an example of them. "Another great discovery is the localising of fifty mental signs of character in the face; another in the localising of the facial signs of all the internal organs; still another, the relating of every mental faculty to a certain physical organ or system of functions." At page 236, vol. i, a list of the fifty mental faculties and the various organs and functions from which they derive their powers is given. One has some difficulty in understanding how a faculty can derive its power from a function; but will be inclined to admit that possibly Hope may in some mystical way be related to the liver, although how the liver and the faculty of analysis are related is not easy to understand. Some of the faculties have very funny names—*e. g.*, bibativeness, approbativeveness, puemativeveness, &c. The words strike us as badly coined. The face is divided into three regions, the chemical (around the mouth), the architectural (related to the nose and eyes), and the mathematical (to the forehead). The book is interesting as a kind of playing at science. One experiences some relief in looking over the different portraits, although the remarks about the law of the straight line, curve and cube, &c., governing the face, smack somewhat of palmistry. The whole book leaves upon us the impression of a long drawn out, very confused compound of science, philosophy, mysticism, and what seems to us very like nonsense.

Traité Élémentaire d'Anatomie de l'Homme. Par CH. DEBIERRE. Paris: Felix Alcan. 1890.

A BRIEF notice of the first volume of this work has already appeared in those pages (April, 1890). The appearance of the second volume enables us to review the book as a whole. There can be no doubt that M. Debierre has furnished us with a large and valuable addition to the literature of

human anatomy, the volume containing together about 2,000 pages and more than 900 illustrations. To the student of medicine in this country, already taxed in all departments of study with overgrown text-books, the size of this work will not recommend it; but, on the other hand, by the practitioner or teacher it will be found a high-class book of reference. It takes up the whole subject of human anatomy, dealing with all the systems and organs, and giving under each, in addition to the anatomical description, an account of its function, histology, and development. The concluding chapters are devoted to general embryology and the genealogy of man.

The anatomical descriptions are often wanting in fulness of detail, particularly in the sections devoted to the bones and muscles and to histology; but, on the other hand, the development of the organs is fully gone into; and the chapter on general embryology is, from the point of view of human anatomy, very satisfactory. In the matter of embryology, however, the author has limited himself too much to the human subject, for despite all the recent advances, our knowledge in this department is still to a large extent inferential from researches on the lower animals. But if these be the weak points in the work, it must be admitted that Professor Debieyre has done good service in the full discussion which he gives to the various views of structure and function held by different observers, and in the copious references to the literature, both ancient and modern. For almost every statement the authority is given, and the book is thus rendered specially valuable to those who seek to investigate the subject, either for scientific or medico-legal purposes.

The illustrations are of great merit. Although most of them are familiar, the clearness of their execution and the liberality with which they are coloured are especially to be noted. There are a number of good diagrams which will be found useful by the casual student. Each volume is published at 20 francs.

Aids to Sanitary Science. By FRANCIS J. ALLAN, M.D.,
Assistant Professor of Hygiene in the College of State
Medicine. London: Baillière, Tindall & Cox.

WORKS on sanitary science increase rapidly. A few years ago Parkes was almost the only standard authority on the subject, while now there are, in addition to the text-books by Wynter Blyth and Whitelegge, quite a number of smaller works treating of separate branches of the subject, besides a

variety of "grinds" intended to aid the student in fixing on his memory the facts needed for an examination. Dr. Allan's little book is a very excellent example of the last named class. He has taken as his guide Dr. Parkes' well known manual, and by condensation, omission, and rearrangement, as well as by culling freely from other sources, he has succeeded in producing a really admirable synopsis of what it is most necessary for a candidate to know. Dr. Allan is evidently well acquainted with the literature of the subject, and his references to the writings of Drs. Russell, Nasmyth, M'Fadyen, &c., show that he has not confined himself in his studies to his own side of the Border. In the section on the examination of water, the tables for chemical analysis are doubtless those of the College of State Medicine, and should be very useful to the student working either at home or in a special laboratory. The book, of course, should be read along with or after Parkes. Keeping this in view, there is little in it to criticise adversely, but in the next edition the author might leave out, on pp. 14 and 15, the word "square" before acre, there being no such thing as a linear acre, and the area being the same whatever the shape. He might also correct a few errors in the paging of the index, as under the headings, Abattoirs, Acids in the Air, Anthrax, &c., &c.

Index-Catalogue of the Library of the Surgeon-General's Office, United States Army. Authors and Subjects. Vol. XI. Phædronus—Régent. Washington. 1890.

WE have repeatedly referred, with high commendation, to the progress of this important work. The feature of greatest value in these volumes is the indexing of SUBJECTS, and especially of subjects dealt with in the periodical literature contained in this large library. In the present volume we find it stated that of SUBJECT TITLES, there are 14,262 referring to books, and 38,080 referring to journal articles. The value of such references for those working up any subject is enormous; and all medical workers, directly or indirectly, must profit greatly by this gigantic undertaking, carried out by the liberality of the United States Government. One familiar with the difficulties attendant on work of this kind, can scarcely turn over the pages without being impressed with the wonderful care and accuracy everywhere noticeable, due, no doubt, to the organising skill of the librarian, Dr. John S. Billings.

Reports from the Laboratory of the Royal College of Physicians, Edinburgh. Edited by J. BATTY TUKE, M.D., and D. NOEL PATON, M.D. Vol. III. Edinburgh and London: Young J. Pentland. 1891.

Transactions of the Association of American Physicians. Fifth Session. Vol. V. Philadelphia. 1890.

Transactions of the American Pediatric Society. First Session. Vol. I. J. B. Lippincott Company. 1890.

THE Edinburgh volume contains the record of another year's work, embracing a wide range of subjects—therapeutical, physiological, gynæcological, pathological, and experimental. It is unnecessary to refer to the papers in detail, but we may mention that on Cystic Disease of the Liver and Kidneys by Dr. Charles Kennedy, in order to call attention to the fact that in the Museum of the Glasgow Royal Infirmary there are two very fine specimens of cystic kidneys, one of which weighed when removed from the body 8½ ounces. In this case, however, which was from a private source, no renal disease was suspected during life. It will be observed from the title-page of the volume that Dr. Noel Paton has succeeded Dr. G. Sims Woodhead, who has been transferred to a larger sphere in London.

The American volumes contain many contributions of great scientific and practical interest and importance.

MEETINGS OF SOCIETIES.

MEDICO-CHIRURGICAL SOCIETY OF GLASGOW.

SESSION 1890-91.

MEETING VIII.—19TH DECEMBER, 1890.

DR. MIDDLETON, *in the Chair*.

I.—CASE OF RHEUMATOID ARTHRITIS WITH SUBCUTANEOUS NODULES.

BY DR. J. WALLACE ANDERSON.

Dr. J. Wallace Anderson showed a case of rheumatoid arthritis in which there were many subcutaneous nodules on

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different parts of the body. The patient, Mrs. S., aged 50, had suffered from what she called "rheumatic pains" for the last fifteen years. She was positive they had at no time been accompanied by fever, perspiration, or other symptom that would suggest acute disease, and that they had been present for five years before any swelling or twisting of the joints was noticed. Patient was equally certain that, of a large family, not one except herself had suffered from rheumatism. Her arms, hands, and feet presented the usual fixity and varied distortions of rheumatoid arthritis, and more especially two or three fingers showed that phalangeal distortion so particularly described by Garrod, namely, flexion of the first and third phalanges and extension of the second; and in one or two instances there was partial metacarpo-phalangeal dislocation. As if to make the picture more complete, she had complained of pains in the temporo-maxillary joints; more especially the left, to which she often had to apply fomentations; she could also sometimes hear a clicking or creaking in these joints. There was no cardiac disease. As to the subcutaneous nodulation, which was of more than ten years' duration, there was, in addition to a few small nodules on the back of the distorted fingers and toes, a rather larger one over the left ulna, and at one or two other points. The most conspicuous, however, were one large nodule on each olecranon, and one slightly smaller over each patella. To the touch they appeared to be an aggregation of smaller, harder nodules with softer tissue between. They were all on extensor surfaces and moved freely under the skin. Dr. Anderson pointed out that while some of the most recent authorities on the subject, such as Drs. Cheadle and A. E. Garrod, held that these nodules were essentially rheumatic ("absolutely and solely rheumatic," says Cheadle), the case now shown answered exactly to Garrod's description of rheumatoid arthritis. Either there was no absolute distinction between rheumatoid arthritis and chronic rheumatism (and this, Dr. Anderson said in passing, was his opinion), or else the position that subcutaneous nodules were absolutely characteristic of the rheumatic cachexia must be given up.

Dr. Middleton regarded the case as quite typical of rheumatic subcutaneous nodules, while the joint affection was undoubtedly rheumatoid arthritis. The case differed somewhat from one he had shown some three years ago, but was like it in its chronicity and in the absence of cardiac affection. He believed there were various classes of cases showing these nodules; in one class, the nodules were permanent or persisted

for many years, and were painful; in another class, the nodules were painless and of brief duration (weeks or months). The latter class seemed more common in childhood, and was apparently more apt to be associated with endo-cardial disease. He suggested to the meeting that if a more careful scrutiny of sick children were made, especially when suffering from chorea or from indefinite pains, the number of cases of rheumatic subcutaneous nodules would be greatly increased. In regard to the pathology of this condition, Dr. Middleton pointed out that in the case which he had previously reported, one of the nodules was removed and was shown to consist of connective tissue in various stages of development, the microscopic and other appearances suggesting that the condition had its origin in some irritant carried by the blood.

Dr. Barlow remarked that the distribution of the nodules in *Dr. Anderson's* patient, and in the case referred to by *Dr. Middleton*, had suggested to his mind a possible connection with the lymphatic system. These nodules seemed to follow in their distribution the course of the lymphatic vessels and spaces.

II.—CASE OF PULSUS BIGEMINUS, OR CARDIAC COUPLE-BEAT, IN WHICH THERE WAS A QUADRUPLE AORTIC MURMUR.

BY DR. J. WALLACE ANDERSON.

Dr. Anderson read notes on the above case, which appeared in our February number (see page 123).

Dr. R. Broom confirmed all the statements made by *Dr. Anderson* as to the case. There could be no doubt that the four murmurs corresponded to the two beats of the pulse. With regard to the pulse tracings, when the bigeminus quality was absent the pulse was perfectly regular, and had all the characters of a pulse of aortic obstruction. Owing to the radial artery being unusually near the flexor tendons, it was rather difficult to get the sphygmograph satisfactorily adjusted, which accounted for some of the imperfections of the tracings.

Dr. Workman thought that the doubling of the murmur and pulse was more likely to be due to interference with the vagus, rather than to anutrition of the intrinsic nerve centres in the heart, as the condition was recovered from. He also thought that the first beat of the bigeminus pulse meant a contraction which did not empty the heart, so that almost immediately a second impulse was produced, giving the second rise, which appears on the tracings to be as high as the first.

Dr. Middleton regarded the case as a very interesting one, and regretted that no examination of the body had been allowed. It was difficult to offer an opinion on the diagnosis of a case that was not before the meeting, but he ventured to think that a different interpretation could be put on the facts placed before them from that given by Dr. Anderson. While several of the usual signs of aortic obstruction and regurgitation were not noted—such as the water-hammer and the capillary pulse, and marked evidence of hypertrophy of the left ventricle—all the facts recalled to his mind several unusual cases of mitral stenosis which had come under his observation, and he was inclined to believe that the essential lesion had been mitral stenosis. He did not in the least question the accuracy of the observations made as to the rhythm of the cardiac murmurs, but in view of the pulse tracings, and the general history as recorded, he was quite prepared to believe that the case was of the same nature as one which he had recorded at the Society some three years ago, which he had regarded during life as a case of aortic obstruction and regurgitation from the presence of V.S. and V.D. murmurs, but which the *post-mortem* examination showed to have been a mitral stenosis with only a minor degree of aortic lesion. This diagnosis would readily explain the gastric attacks from which the patient suffered, and their coincidence with the peculiar characters of the pulse, for both could be attributed to the obstacle presented at the mitral valve to the onward flow of the blood, and there was no reason to regard these as functional. The tracings did not show the characters of the *pulsus bigeminus* in their most marked form, but the general characters of the tracings, and their tendency to assume the form of the *pulsus bigeminus*, were alike suggestive of a mitral stenosis. He believed that the *pulsus bigeminus* was regarded as generally due to a mitral lesion. The variation in the intensity of the murmurs heard would be due to inequality in the force of the cardiac contractions; *e.g.*, the loud V.S. murmur would correspond with an efficient contraction of the ventricle concurring with a full condition of both; succeeding this there would be a feeble V.D. murmur due to the fact that diastole occurred too soon, owing to the right ventricle having only partially been able to empty itself by reason of the obstruction at the mitral orifice; an inefficient contraction of the ventricles would follow with a feeble V.S.; and the last stage in the cycle would be a second and longer diastole, with a loud V.D., the heart recovering itself, as it were, for a more efficient systole. Such an interpretation of the case was also

quite in harmony with the record made on the occasion of the patient's previous residence in the Infirmary. He would add, that the sudden death was quite consistent with this hypothesis, for the patient to whom he had already referred also died quite suddenly.

Dr. Anderson in reply referred to the chairman's destructive criticism. He (Dr. Anderson) was quite aware of the principles which regulated the particular area and conduction of a cardiac murmur, and could believe it possible that a mitral murmur could be heard in the region referred to in his case, but he thought it in the highest degree improbable; while the character simply of the double murmur clearly pointed to an aortic lesion. He did not say there might not have been a mitral element as well. As to the tracings, even had there been purely aortic regurgitation, he did not think they would have negatived that lesion, although they were far from being of the common and generally accepted type. But there was in addition marked aortic obstruction.

III.—CASE OF ENDOCARDITIS AFFECTING BOTH MITRAL AND TRICUSPID VALVES.

The Secretary showed, for Dr. J. H. Carslaw, a specimen of endocarditis affecting both mitral and tricuspid valves, and read notes of the case.

MEETING 1X.—9TH JANUARY, 1891.

DR. DAVID N. KNOX *in the Chair*.

I.—THE "HARVARD" CHAIR FOR SURGICAL AND GYNÆCOLOGICAL PURPOSES.

MR. WALSH demonstrated the "Harvard" chair for surgical and gynæcological purposes, and received the thanks of the Society.

II.—THREE CASES OF STRICTURE OF THE ŒSOPHAGUS TREATED BY GASTROSTOMY.

BY DAVID NEWMAN, M.D.

DR. NEWMAN showed two patients on whom he had performed the operation of gastrostomy for stricture of the Œsophagus, and read notes of three cases. For paper see page 197.

Mr. Henry E. Clark remarked that *Dr. Newman's* cases were very encouraging, and testified strongly to the advantage of doing the operation by two stages. The incision used, he noticed, was an oblique one, and not the vertical incision suggested by *Mr. Howse*. That gentleman claimed for his incision the advantage that by going through the outer fibres of the rectus, and parallel with them, a sphincter was formed, which prevented the escape of the stomach contents. Now, in the cases under observation the difficulty seemed to be in keeping the opening patent, so that evidently no such sphincter was needed. As to the mode of suture; an American surgeon, whose name he (*Mr. Clark*) did not remember, had pointed out that the essential thing was to make the stitches pass through the sub-mucous tissue, which being formed of fibrous tissue was able to support the stitches, while neither serous nor muscular tissue could. The fact that the needle was passing into that tissue was evidenced by the sense of resistance experienced.

As to the question of operation for excision of the tumour in the second case, it was firmly connected with the back of the larynx, and it seemed to him that a complete laryngectomy would be a necessary part of the operation.

Mr. Parry asked *Dr. Newman* whether he anticipated any difficulty in keeping the opening into the stomach patent? At the present time, dilatation by means of a conical bougie seemed to be necessary before the tube for the food could be introduced. He was of opinion that, instead of making an incision into the stomach, it would be better to punch out a portion of the walls of the organ.

Mr. Maylard, in looking at *Dr. Newman's* successful cases, said he could not help recalling the first case that was performed in this country by the late *Mr. Cooper Forster* at *Guy's Hospital*. It was fatal in its result, but created a good deal of attention at the time. No doubt, much of the success of the present cases must be attributed to the introduction of antiseptic surgery, which did not exist at the date when the first operations were performed. With regard to the prognosis of these cases, *Mr. Maylard* said that not a few had died from gangrene of the lung. The admirable sphincter action which existed in both the successful cases, tend to show that there was no need for adopting the vertical incision, advocated by *Mr. Howse* for that purpose. *Mr. Maylard* asked where the opening into the stomach existed in the fatal case.

Dr. Knox congratulated *Dr. Newman* on his great success

in both cases. He thought that instead of one row of stitches between the stomach and abdominal wall, it would be safer to insert two rows, as this rendered the union stronger, and prevented the solvent action of the gastric juice from dissolving the connection after the second stage of the operation had been completed. It was a great assistance also, in preventing the escape of gastric contents, to use a tampon, both within and without the stomach, and so both compress the stomach against the abdominal wall and block up the orifice. Dr. Knox had only performed the operation of gastrostomy once, in May 1889, and his patient lived in great comfort for four months, when he died from pneumonia, apparently due to the fact that the cesophageal tumour was situated immediately behind the root of left lung.

ABSTRACTS FROM CURRENT MEDICAL LITERATURE.

MEDICINE.

By JOHN H. CARSLAW, M.A., M.B., C.M.

Varieties of Paraplegia.—In a paper "On some varieties of Paraplegia with Lateral Sclerosis, with cases," Dr. Michell Clarke, of Bristol, discusses also cases in which symptoms resembling those of spastic paralysis must be considered as belonging to a "functional" disorder and as unassociated with any organic lesion in the cord. The most important of these are those classified by Dr. Hughes Bennett, as "hypertonic paralysis," and "characterised by motor weakness, with excessive myotatic irritability but without rigidity." The points in the differential diagnosis are mentioned in detail, and as regards the *progress* of the malady, Dr. Bennett is quoted as "stating that, so far as it is at present known, these cases "of hypertonic paralysis" either recover or remain in a stationary condition, and do not go on to spastic paraplegia with lateral sclerosis." Dr. Clarke doubts that this is the universal rule. He compares those "hypertonic" cases with the muscular weakness and irritability found in the course of wasting diseases and during convalescence from fevers. He finds very close resemblances, and considers it probable that it is out of this condition that the spastic paraplegia originates which occurs occasionally after enteric fever.—(*Bristol Medico-Chirurgical Journal*, December, 1890.)

Association of Phthisis and Peripheral Neuritis.—Dr. Paterson, of Cardiff, in giving a clinical account of a number of cases of peripheral neuritis, draws attention to the large proportion of them in which there was coincident tubercular disease of the lungs. He does not regard the pulmonary condition as necessarily secondary and due to lowered nutrition through implication of the vagus. Neither does he regard tubercular disease as a common cause of neuritis. The explanation suggested is

that, while alcohol is undoubtedly an important factor in the etiology of neuritis, its abuse also predisposes to phthisis by its debilitating effects.—(*Bristol Medico-Chirurgical Journal*, December, 1890.)

Treatment of Tuberculosis by Injections of Brown-Séquard's Fluid.—In the *Russk. Medic.*, No. 44, 1890, there is an account of a paper read by Dr. D. Uspenski before the Russian Public Health Society upon certain experiments he had made in the treatment of tuberculosis by Brown-Séquard's fluid. Statistics are given for 18 cases; two of these, it is stated, had previously been given up as hopeless. One of these latter was a lad of 18 years who had long suffered from mitral disease, and became ill in the beginning of May last with acute phthisis. All other treatment which was employed had failed to produce any benefit, but after three injections his appetite and general health improved. After six injections he was able to be up; and as the treatment was continued he gained strength, weight, and spirits, while the temperature became lower and the night sweats lessened. After the tenth injection the perspiration had quite ceased, and the patient was able to take outdoor exercise. After the fifteenth (the last)—given on 15th June—recovery was considered as good as complete, and during the whole of the summer he increased in weight. The pulmonary condition became quiescent.

The second case was that of a man of 28 years, whose illness was of one and a half months' duration, and associated with high temperatures and profuse night sweats: both apices were involved and there were tubercular bacilli in the sputum. The injections were begun in the beginning of May and after the sixth of them the appetite increased; while after the twelfth the improvement was so marked that the patient was able to be up; and after the eighteenth his temperature had become normal. There was no increase of weight, and physical examination did not give any evidence of local improvement.

In other cases, too, there was lowering of the temperature and cessation of the night sweats and general improvement. "The tubercular bacilli do not quite disappear under this treatment even in the most successful cases, but diminish in number in proportion to the improvement of the lung condition and the lessening of the expectoration."—(*Deut. Med. Zeitung*, 29th December, 1890.)

Asiatic Cholera in a Dog. Professor Ogata.—In the *Sei-I-Kwai Medical Journal* of 22nd November, 1890, there is an account of the case of a dog which had been affected at Tokyo with Asiatic cholera. The animal lived partly in the room of a man who was attacked by cholera during an epidemic there in September, but it was not fed by him. The man sickened on the night of the 3rd-4th September, and was removed to hospital on the 4th. On the evening of the 3rd the dog had appeared quite well, and ate some broken chicken bones, but on the 4th it had vomiting and purging. On the 5th these symptoms continued, and there were besides great bodily weakness, cramps of the limbs, retracted abdomen, and sunken eyes. It was taken to Professor Ogata's laboratory, when most of these symptoms were observed, and where there was evacuation of a greenish watery fluid from the bowel, and in this the comma bacillus was found in abundance.

The animal was killed and a *post-mortem* examination made immediately. Rigor mortis had already appeared. There was great emaciation.

There was hyperæmia of the mucous membrane of the intestine generally, and also of that of the stomach; the latter organ contained some greenish watery fluid, alkaline in reaction, but without any comma bacilli. Colourless fluid, which was strongly alkaline and contained comma bacilli (but no bacteria), was found in the upper part of the small intestine; in its lower part and in the large intestine the fluid was greenish, but in other respects similar. The bladder contained some albuminous urine giving "the reaction of cholera bacillus." In the blood in the heart no bacteria could be found.

From the contents of the small intestine, plate cultivations were made which showed the characteristics of cultures of the cholera microbe. Microscopic examination of a preserved portion of the intestinal wall was also confirmatory.

The conclusion arrived at is that there is "sufficient ground for the necessity of prevention, in spite of the old opinion of non-infection among animals, which might have been due to the want of investigation. Therefore, when any animal is suspected to have the disease, it is better to apply proper disinfection."—(*Sei-I-Kwai Medical Journal*, Tokyo, Japan, 22nd November, 1890.)

"Congenital Influenza."—Before the American Pediatric Society, at its meeting in June, 1890, Dr. Charles W. Townsend, of Boston, reported a case which was described by him as "congenital influenza," and is of special interest in regard to the place of influenza among the specific fevers.

The mother of the patient had had an attack of influenza with onset on 2nd January, 1890, the symptoms lasting for three days. On the 9th January the child was born naturally—at full time—and very soon thereafter was observed to be the subject of an acute febrile disease. No aid to the establishment of respiration had been necessary. The heart-beat had been counted before delivery as 164 in the minute; soon after birth there was violent and repeated sneezing. "In the evening the respiration was about 100, and accompanied by a slight expiratory moan. On the second day its temperature was found to be 104°, the pulse at least 200, and the respiration 120 to 160, with an expiratory grunt or moan. The baby was unable to nurse on account of shortness of breath, and was very restless and fretful. Nothing abnormal, however, was to be found on examination of the chest or abdomen."

A chart is given, from which it appears that on the third day there was a distinct drop of temperature, pulse, and respiration—of temperature from 104° to 103.2°—of pulse to about 170—and of respiration to 60 in the minute; but the temperature rose again on the fourth day to 102°, and remained at that level until the morning of the ninth day, when there was a sudden and final fall to the normal. "After the third day the pulse and respiration improved, and the baby seemed nearly well, with the exception of its elevated temperature. An occasional cough and slight attacks of sneezing daily, were the only symptoms. At no time were abnormal signs to be found in the chest. The recovery was complete.

"The symptoms and the temperature chart suggest acute lobar pneumonia, and congenital cases of this disease have been reported, the infection coming through the mother. In this case, however, the physical signs of pneumonia were absent, and we have the history of a preceding attack of influenza in the mother, the disease in the child starting at birth."

In the discussion which followed, Dr. Blackader laid stress upon the great difficulty of discovering by physical examination a small patch of pneumonic consolidation, such as occurred in a case of his own, which proved fatal on the seventh day after birth, and was diagnosed only at the *post-mortem*.

Reference was made in Dr. Townsend's paper to a similar case (of "congenital influenza") published in the *British Medical Journal* in March, 1890, by J. Kingston Barton.—(*Archives of Pediatrics*, January, 1891.)

Erysipelas and Parotitis in Influenza.—Further relations of influenza with other specific fevers are illustrated by four cases published by Dr. G. Lemoine in *Rev. de Médecine*, June, 1890, which had complications similar to those occasionally met with in typhus and enteric fever. In these cases, erysipelas occurred during convalescence from influenza: in three the erysipelas was preceded by a swelling of the parotid region (presumably unilateral), such as is seen in epidemic parotitis, while in the fourth there was suppuration of the gland. No previous case, either of erysipelas or of parotitis, had recently been under treatment in the hospital, so that their occurrence was considered to be secondary to the influenza. One of the cases ended fatally, and in it streptococci were found on examination of microscopic sections.—(*Deut. Med. Zeitung*, 25th December, 1890.)

Determination of the Specific Gravity of the Blood.—At a meeting of the Vienna Gesellschaft der Aerzte, on 19th December, 1890, Hr. Hammerschlag described a new method for determining the specific gravity of the blood. He uses for this purpose a mixture of benzol and chloroform. In this the blood will not dissolve, and it is possible by adding more of the lighter fluid (benzol) or of the denser (chloroform) to determine the exact mixture in which a drop of blood will neither rise nor sink, and therefore be of equal specific gravity with it; the specific gravity of the mixture is then taken, and that of the blood accordingly known. Results are given of investigations of blood at different times of the day—in relation to ingestion of food and drink, to diaphoresis, and to various diseases; comparisons are also made between variations in the specific gravity of the blood and variations in the quantity of hæmoglobin.—(*Deut. Med. Zeitung*, 29th December, 1890.)

Bacteria and Exhaustion.—It is generally believed that one is most liable to acquire infectious disease if exhausted when exposed to it. This belief is strengthened by a communication published in the *Deut. Med. Woch.*, No. 34, 1890, and made to the Société de Biologie by Roger and Charrin. It refers to experiments in which animals were forced to undergo severe muscular exertion, and were thereafter found to show seven or eight times as great vulnerability and susceptibility to bacteria as in normal circumstances.—(*Deut. Med. Zeitung*, 29th December, 1890.)

Electricity and the Virulence of Microbes.—In the *Osterr. Monatsschrift für Tierheilkde*, No. 9, 1890, Apostoli and Laquerrière record a series of investigations upon the influence of electrical currents upon cultures of anthrax bacillus. A current of 300 M.-A. continued for five minutes is said to completely destroy the virulence of the bacillus, as proved by subsequent inoculation trials, while lesser currents diminish their activity. The positive pole alone has this power, and it is believed to be due to the development of acids and oxygen, and to be independent of the heat generated in connection with electrolytic changes.—(*Deut. Med. Zeitung*, 25th December, 1890.)

An Early Sign of Endocarditis.—Dr. Duclos, of Tours, writing in the *Revue Gén. de Clin. et de Thérap.*, 17th January, 1889, records a fact of his experience regarding commencing endocarditis, which may possibly be of value as an aid in the early recognition of this affection. While in charge of a military hospital, he chanced to have a large number of young soldiers suffering from acute articular rheumatism under his care, and, while listening to the heart sounds of one of these patients, his finger being at the same time on the radial pulse, he was struck with the want of synchronism between the ventricular contraction and the pulsation at the wrist, the latter being delayed about two-thirds of a second. The following day a systolic apex murmur was heard. He afterwards took pains to note the occurrence of this phenomenon in other cases, and found that it was followed by a murmur at the end of 24 to 36 hours in every instance. These observations were extended over several years, and were confirmed in a number of cases by Professors Parrot and Potain.

The author has no conclusive theory to offer in explanation of this phenomenon, but he thinks it is probably due to a weakening of the muscular fibres subjacent to the endocardium. He compares it to the weakened respiratory murmur frequently observed at the beginning of pleurisy, a few hours before friction sound is developed or effusion takes place. He has noted the same want of synchronism in two cases of typhoid fever, and in three of erysipelas, in which endocarditis subsequently developed.

Dr. Duclos draws some practical conclusions in regard to treatment, based upon the early recognition of this affection, and he believes he has succeeded in arresting the disease, in certain cases, before irreparable injury had resulted. His plan is to apply immediately a large fly blister over the precordial region,

or, in default of this, a mustard plaster, dry cups, or leeches. He increases, also, the dose of the remedy that is being given at the same time for the rheumatism. Of course the patient is required to remain quiet in bed.—(*Boston Med. and Surg. Journ.*, 7th November, 1889.)—D. M'P.

Sham Hyperpyrexia.—Among other malingerers' dodges the *North-Western Lancet* mentions "an astonishing performance, . . . the imitation of fever by pretended sufferers, which is done by wrapping the thermometer in the edge of the blanket and then holding it in the mouth. The exertion of capillary attraction sets free sufficient heat to raise the mercury in the thermometer some five or six degrees, and produce an apparent temperature wholly at variance with the other features of the case, and a consequent puzzle to the unsuspecting physician."—(*Boston Med. and Surg. Journ.*, 13th February, 1890.)—D. M'P.

DISEASES OF THE SKIN.

BY DR. A. NAPIER.

Bulkley on the Treatment of Eczema in Elderly People.—Among the causes of eczema in the elderly, those of a local kind play an insignificant part; any hereditary element is rarely traceable; "the chief elements of causation seem to be a debility of tissue, rendering it everywhere prone to take on inflammatory or degenerative action; and as an early or internal cause, a certain faulty kidney action." The urine of such patients is usually scanty, with high specific gravity and deposits of water; sugar is not uncommonly present. The bowels are usually torpid. These facts give the basis for treatment. At the outset a dose of blue pill mass, colocynth and ipecac. should be given, to be repeated on the second night after, and possibly also every week or ten days; or, in other cases, a pill of aloes and iron before each meal; or, when indicated, a minute dose of calomel (even one-tenth grain) before meals and at bedtime. To act on the kidneys the best agent is acetate of potassium (10 to 15 grains three times daily, after meals) with nux vomica and infusion of quassia. Iron must be used sparingly; the well-known sulphate mixture may be given after a course of the foregoing. Arsenic is rarely of value, except when a bullous or pemphigoid condition develops; it will then prove most serviceable, and will arrest the formation of blisters completely. "To be of real value it must then be used with a free hand and fearlessly, given every two or three hours, alone, in quantities sufficient to produce the desired effect; beginning with three drops, the dose may be increased by half a drop every other dose until five, seven, eight or more drops are taken at least six or eight times daily, and sometimes it may even be necessary to give a trifle of opium with each dose to check its action on the bowels." Taken thus, apart from meals, it should be largely diluted, possibly with some alkaline water. This will not remove the eczema, but only the bullous condition.

Quinine is sometimes serviceable as a tonic, given before meals, with the alkaline mixture after meals; it must always be given where malarial causes are suspected. Direct neurotic treatment is seldom required; but sedatives are often of great assistance to procure sleep—phenacetin in five grain doses; antifebrin, 6 grains; or tincture of gelsemium, 10 to 20 drops, with a drop of tincture of aconite, which may be repeated in an hour, if necessary. Opium is to be avoided.

The eczematous patient gets on best with no alcohol; the fermenting substances (ale, beer, porter), also the sweeter wines and champagne, being particularly harmful; still, care must be exercised in withdrawing stimulants from elderly people long accustomed to them.

"Diet has somewhat to do with eczema in elderly persons, although to a much less extent than in early life." Tea and coffee in moderation may be allowed, and an ordinary mild diet. The diet should be diminished for those who take little or no exercise.

Local Treatment.—For generalised eczema, and that on trunk and limbs, the most useful application is the following:—*R.* Pulv. calaminæ, 2 dr.; zinci ox., 4 dr.; acidi carbolici, 1 to 2 dr.; glycerini, 6 dr. to 1 oz.; aquæ calcis, 1 oz.; aquæ rosæ, ad. 8 oz., to be applied frequently over the surface several times daily, the powder in it being allowed to adhere to the skin and the part covered only with the ordinary clothing; to any exuding surfaces apply a trifle of absorbent cotton.

On more localized patches with thickening and itching, use a tar and zinc ointment (*R.* Zinci ox., 1 dr.; unguenti picis, 4 dr.; ungt. aquæ rosæ, 1½ oz.), spread thickly on the woolly side of pieces of lint cut to fit the patches, and keep on with a bandage. If the thickening resists this, add a fourth part of diachylon ointment, or salicylic acid (10 to 20 grains to the ounce).

In eczema about the head and face use the calamine and zinc ointment, with a little camphor; or the following:—*R.* Acidi tannici, 1 dr.; acidi carbolici, 5 to 10 gr.; ungt. aquæ rosæ, 1 oz.

Water is to be avoided; "water is poison to an eczematous surface." When cleansing or stimulation is required, nothing is better than a soft potash soap, employed alone, or in watery solution, or in alcohol; it should be lightly applied, diluted with water, the part quickly dried, and the appropriate dressing at once reapplied. "With the exception of tar soap, which is occasionally employed, medicated soaps are a delusion." Baths are often harmful, unless very judiciously used. The general bath may be sometimes employed, with one to three pounds of starch in each 30 gallon bath, or a pound or two of gelatine, or a bag of bran soaked in the bath. The alkaline bath may be of service, the best form being a combination of carbonate of potassium, four ounces, carbonate of sodium and powdered borax, of each three ounces, in the 30 gallon bath, with a pound or two of starch. —(From the *Trans. of the New York State Medical Society*, 1890.)

Treatment of Dermatitis Herpetiformis.—At a recent meeting of the American Dermatological Association, Dr. L. A. Duhring read a paper on the above subject. The tone of those who took part in the after discussion was somewhat despairing, very little definite success being reported. Dr. Duhring had much to say in favour of sulphur. "The chief point in the paper is the method of using sulphur. It is not its use as a bath or lotion, but by strong, vigorous friction, which constitutes the pith of the treatment. It has been my custom the past five or six years, in suitable cases—those of the vesicular or bullous variety, whether the lesions be few or many—to attack the whole of the skin with this vigorous rubbing. The patients may say they cannot stand it, yet they generally do. The majority of patients are more or less relieved, and after one or two applications are willing to go on with the treatment. I have seen the lesions disappear from day to day and week to week, and that is what I mean by a cure. I would not expect any relief from sulphur baths or lotions.

"As to the number of cases I have treated in this way I cannot say, but I have been in the habit of using it in proper cases during the last five or six years. In the erythematous variety it rather tends to aggravate the disease, but the vesicular and bullous forms I do not hesitate to attack in a vigorous manner, breaking down the blebs and rubbing them away, continuing the rubbing perhaps an hour at each application. The more vigorously the surface is rubbed the better." The attack is distinctly shortened. "A few of my cases got well and passed from my hands. Others were only relieved during the attack. It might be a matter of weeks or of months. I do not pretend to say that the treatment cures the disease, so that we may expect exemption for life. I only speak of curbing the attack. The duration of the treatment varies."—(*Journal of Cutaneous and Venereal Diseases*, November, 1890.)

Leukoplakia Linguae and Epithelioma.—A case of leukoplakia linguae in a man of 73, who had had half the tongue removed for undoubted epithelioma two years previously, was shown to the Medical Society of London by Mr. Marmaduke Sheild. The patient had suffered from "bad tongue" for upwards of twenty years, being an inveterate smoker. The case demonstrated the local origin of these varieties of epithelioma. Mr. Sheild raised the question as to the diagnostic value of "nests" in such tumours, especially in reference to a decision as to the advisability of operative interference. Mr. Knowsley Thornton said that this important question involved another hardly less so, namely, as to how far surgeons were justified in removing portions of a growth for microscopical examination, at the risk of general infection.—(*Brit. Med. Journ.*, vol. ii, 1890.)

Brown Pigmentation from Arsenic.—Förster describes the case of a little boy, suffering from Graves' disease, who developed bronzing of the skin after a long course of arsenic. The lad was 10 years old, and besides the usual symptoms of that disease, had very obstinate diarrhoea and rises of temperature which lasted some time. He was put on arsenic about the middle of July, and towards the end of September it was noticed that the face was somewhat yellow, and the skin of the trunk, formerly pale, had become brownish. In the following February, the face was again almost normal, as also were the forearms and hands. The whole neck, however, showed a brownish coloration extending to the upper part of the chest; and immediately under the nipples began a darker pigmentation which appeared deep-brown on the abdomen, while the back was somewhat lighter. The buttocks and the upper parts of the thighs were likewise dark-brown, but got paler farther down. The two sides were equally affected. Arsenic had been administered without interruption since July—a period of nearly eight months. It was now diminished, and two months later the bronzing had become less marked generally and more circumscribed. In respect to the further history, the patient showed, eighteen months later, a faint brownish pigmentation on the chest and abdomen. Wyss recently published two cases of brown pigmentation after a long course of arsenic for chorea, under the name of melanosis. In one, a boy 12 years of age, the colouring was visible after six weeks' use of Fowler's solution (3 drops increased to 15 daily), and in the following weeks it became quite marked. It disappeared, only to recur on the resumption of the drug. In a second boy, two years younger, pigmentation was observed after the same dosage in five to six weeks.—(*Berlin. klin. Wochens.*, No. 50, 1890.)

The Treatment of Eczema.—Dr. P. G. Unna, in a paper on the nature and treatment of eczema, says that the treatment of chronic eczema may be advantageously considered under two different heads: (a) By the use of anti-parasitic measures the germ itself is attacked. This is the direct treatment. (b) On the other hand, the epidermis, which is the nutrient soil, may be made less suitable for the growth of the specific germ. This is the indirect treatment. The ways and means which have empirically proved themselves to be of the greatest service in the treatment of eczema are partly direct, partly indirect in their action, or—and these are the best—they act at the same time directly and indirectly. The radical treatment of eczema aims at the destruction of every single germ in the depths of the epidermis. A disappearance of the eczema efflorescence is by no means equivalent to a thorough cure of the disease, which is, however, always attained by the prolonged and continuous use of specific measures. For the treatment of seborrhœic eczema we possess as specifics strong alkalis, several metallic oxides, and the reducing group of medicinal agents. In this series of specific remedies, the most worthy of mention are caustic potash, zinc oxide, lead oxide, mercuric oxide, sulphur, resorcin, pyrogallol, chrysarobin, and the various kinds of tar. The choice of the remedy and its form of application are determined in seborrhœic eczema, as in all forms of eczema, by the degree of inflammation which is present. When the inflammation and oozing are pronounced, the milder specifics are

indicated, such as zinc and lead oxides, sulphur and resorcin, in the form of powders, lotions, pastes, and glycerine-gelatines. When the inflammation is less and the dryness greater, the stronger specifics, such as chrysarobin, tar, and mercuric oxide, are indicated; especially in the form of salves, salve mulla, plaster mulla, and water-proof dressings. It may be taken as a general rule that among the remedies and modes of application, those must be selected for each case which will produce the most powerful effect on the specific germ (direct or indirect) without exciting an artificial inflammation. The only internal remedy which exercises any specific though limited influence on seborrhœic eczema, and especially on its drier forms, is arsenic. All other forms of treatment of the system in general, and of other organs which have a reflex association with the skin (such as the bowels, uterus, kidneys), all dietetic cures, all baths (except sublimate baths), may be considered only in so far as they may possibly assist the local treatment of the skin in an indirect way.--(*The Brit. Journ. of Dermatol.*, No. 8, vol. ii, 1890.)

Alopecia Areata a Sequel of Ringworm.—Mr. Jonathan Hutchinson, speaking at the annual meeting of the British Medical Association at Birmingham on alopecia areata, reiterated his opinion that it was in all probability a result of cryptogamic disease, and that it was in fact a sort of modified ringworm or at any rate a sequel of that disease. In a large number of cases it occurred in those who had been previously the subjects of ringworm, and often on the actual site of the former ringworm patch. In cases in which alopecia was not a sequel of ringworm in early life, he believed that it occurred from direct contagion from another alopecia patient or from ringworm. The patches of alopecia had abrupt margins, spread at their edges, and were never symmetrically placed. They frequently began on the occiput, and in these cases it might be suspected that the contagion was effected from the back of a chair. The cases of loss of hair which could be reasonably suspected of being of neurotic origin were quite distinct from alopecia areata: the baldness was either symmetrical or definitely one-sided, never irregular. He believed that it was impossible for nerve causation to produce round patches or to cause patches to spread at their edges. Areas of disease which were really neurotic always occurred in the distribution territories of nerves, and were never infective at their edges. When headache or dyspepsia was present, it was merely a coincidence. Patients with alopecia were often in excellent health.—(*Archives of Surgery*, October, 1890.)

Creolin in Erysipelas and Eczema.—G. G. Rothe, Attenburgh (*Memorabilien*, 9).—For the treatment of erysipelas, Dr. Rothe has formerly employed the following prescription: *R.* Acid. carbolic., spirit. vini, āā 0·5; tr. jod., 1·0; glycerin. pur., 10·0; ol. menth. pip. gtt., ii. S. to be painted over the surface affected every two hours. Since the introduction of creolin he has employed this preparation for the purpose, his prescription being: *R.* Creolin., 1·5; cret. præp., axung. porc., āā 15·0; ol. menth. pip. gtt., v. This ointment is spread in the thickness of the blade of a knife over the diseased parts twice or three times a day, a thin layer of cotton-wool being applied as a covering. In twelve to twenty-four hours improvement was always apparent, and the disease was cured in three or four days.

The same ointment also did good service in a case of weeping eczema of the face, as also in several cases of eczema in children. A patient suffering from scabies was treated with a thorough washing with soft soap and inunction of this ointment, with such a decided effect, that Dr. Rothe considers creolin to be undoubtedly a specific for the disease.—(*The British Journal of Dermatology*, November, 1890.)

EPIDEMIOLOGY.

By A. K. CHALMERS, M.D., D.P.H. CAMB.

On the Practical Disinfection of Excrementitious Substances.—Experiments were conducted by Dr. S. von Gerlőcyy, of Pesth, in order to test the value of certain substances used as disinfectants, about which there was a difference of opinion. The substances to be disinfected and deodorised were divided into five groups—(1) Night-soil from cesspools; (2) Sewage (liquid contents of sewers); (3) Solid contents or sludge from street gullies; (4) Dry street sweepings; (5) Fresh excreta from patients suffering with acute diarrhoea and typhoid fever. The substances employed as disinfectants were (1) corrosive sublimate, (2) iron sulphate, (3) zinc sulphate, (4) copper sulphate, (5) crystallized carbolic acid, (6) crude carbolic acid, (7) carbolised lime (yielding $2\frac{1}{2}$ per cent), (8) creolin, (9) oxynaphthotic acid, (10) raw concentrated sulphuric acid, (11) freshly slaked lime, (12) boiling water, (13) hot and cold solutions of wood ash lye (4 per cent of carbonate of potash), (14) solution of common salt (26.1 per cent).

Samples of the disinfected material were withdrawn on a platinum needle, and introduced into warm fluid peptone gelatine. They were examined at intervals of twenty-four and forty-eight hours, and for three to four days after treatment.

GROUP I.—Night-Soil.—Samples for experiment were obtained from a night-soil contractor. One hundred grains were placed in a glass vessel and treated with weighed quantities of each of the disinfectants named in different proportions. The results show that a practical disinfection of night-soil is all but impossible, since even $2\frac{1}{2}$ per cent of corrosive sublimate is insufficient to render it germ free. This quantity would entail an expense of 48.50 dollars per cubic yard. Complete sterilisation resulted from the use of a 4 per cent solution of copper sulphate, and with this material one cubic yard of night-soil could be disinfected at a cost of about 4 dollars. For the purpose of deodorisation, crude carbolic acid may be regarded as successful.

GROUP II.—Sewage Water.—For the disinfection of liquid sewage from sewers, copper sulphate, in the proportion of 1 to 1,000, was found to be sufficient to destroy all germs and make the liquid clear and inodorous.

GROUP III.—Sludge from Street Gullies.—It is extremely difficult to disinfect this substance thoroughly. For deodorisation carbolised lime in moderate quantities proved sufficient, but the author recommends the use of carbolic acid diluted to 1 in 1,000.

GROUP IV.—Street Sweepings.—Complete disinfection with the foregoing substances was impossible. Even when it was thoroughly soaked with solutions of corrosive sublimate, copper sulphate, etc., the road dust was not made sterile, nor was the strewing of carbolised lime satisfactory. The advantages of this mode of disinfection are deceptive.

GROUP V.—Excreta.—The excreta used in these experiments were diluted with three times their weight of water. All the disinfectants named were tried in different proportions. The author concluded that a strong solution of copper sulphate should be used, at least 1 grain of disinfectant being added to 100 centimetres of excreta. Better results arise from the use of three times their weight of boiling lye (2 parts of water to 1 part of wood ashes). Milk of lime (1 part slaked lime in 20 parts of water) used in the proportion of one-fifth to one-tenth the weight of the excreta also disinfects cheaply and well.

On the Use of Lime as a Disinfectant for the Excreta of Cholera and Typhoid Fever Patients.—Dr. E. Pfuhl, of Berlin, conducted experiments to determine in what quantities and in what form quicklime could be used to the best advantage in the disinfection of the excreta of cholera and typhoid fever patients. Experiments were made

with fresh excreta, mixed with different proportions of quicklime, from 2 to 6 parts per 100 by weight being added to the faecal matter in sterilised flasks, and cultivated on the system of Von Esmarch. Test samples were taken at intervals of one, two, and six hours after the addition of lime. It appeared that by this set of tests not even a 6 per cent addition of the lime, crushed into small lumps, was enough to sterilise the germs in one hour, while as small an addition as 3 per cent destroyed all fertile germs in six hours. When made into a paste with water (20 per cent milk of lime), a more thorough mixture with the excreta was possible. The solution was added to typhoid fever dejections in the proportion of 2, 3, 4, 6 or 10 per cent of the milk of lime to the unit of faecal matter. The mixture was shaken and samples were taken at the end of one, two, four, six and twenty-four hours and seven days, and were bacteriologically tested. Every one of the gelatine tubes proved sterile, and it was shown that 2 per cent of milk of lime was sufficient to destroy all the germs within one hour. Further experiments to ascertain the smallest quantity of lime which was necessary, showed that a 1 per cent addition of lime of the above strength was fatal to all germs in twenty-four hours, while 2 per cent only was required to destroy them in one hour. Dr. Pfuhl afterward concluded that all that was necessary was to render the mixture with the excreta distinctly alkaline by means of lime, and in all cases where the reaction was distinctly alkaline, the mixture was proved by culture experiments to be sterile.—(*Boston Medical and Surgical Journal*, 1890.)

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ORIGINAL ARTICLES.

NOTES OF A CASE OF TREPHINING OF THE SPINE FOR FRACTURE, WITH DISLOCATION OF DORSAL VERTEBRÆ.*

By D. N. KNOX, M.A., M.B.,
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THE patient now shown, S. S., aged 13, a pit-boy, was admitted to the Glasgow Royal Infirmary on the evening of 28th January, 1890, suffering from a severe injury to his back, through a cage having fallen upon him. His body had been bent almost in two, but there was no wound. He seemed in great pain, and could only rest when laid on his side with his legs drawn up. He complained of severe cramps in his legs, and there did not appear to my house-surgeon to be complete paraplegia. There was much bruising of his back, and a very distinct projection was found in the dorsal region of the spine by a displacement backwards of the eleventh dorsal vertebra. Urine was passed involuntarily soon after admission. The boy was much bruised about the face, but no other injuries could be made out. Next morning, when I first saw him, there was complete loss of power and of sensation in both lower limbs, but the patient had control of his bladder. After

* Read before the Glasgow Medico-Chirurgical Society, 30th January, 1891.

consultation with some of my colleagues, I trephined the spine on the 30th January, 36 hours after the injury. I cut down on the projecting spinous process, and carefully separated the muscles from it and from the spine and laminæ of the vertebra above. There was much effused blood in the tissues and much contusion of the muscles, and the tip of the tenth spinous process was broken off. It was now seen that the body of the eleventh vertebra was broken across in a direction obliquely downwards and forwards; the upper articular processes were also fractured and displaced behind the lower articular processes of the vertebra above. The lower vertebra was displaced backwards fully three-fourths of an inch, and its spine was rotated as much to the right side. The laminæ of the tenth dorsal vertebra were now sawn through by Macewen's saw, and the spinal theca exposed. This was not opened. Small portions of the articular processes were also nipped off, and the spine being carefully extended, the displaced vertebra was pushed back into position. The spinal canal was carefully cleaned, and as the soft tissues were so much injured the wound was stuffed with gauze. On opening the canal, pulsation was not at first felt in the cord, but by the end of the operation it could be distinctly felt. On the day following the operation sensation was found to be perfect in both lower limbs, but it was the third day after the operation before he could move his toes. This was the sole movement of which he was capable for nearly two months.

Patient rallied well from the operation, and though he complained of some pain when his wound was being dressed, he was quite comfortable and happy at other times. The wound was not stitched up on account of the severe bruising of the tissues, but was allowed to granulate. This was a slow process, and no doubt retarded the boy's convalescence. The fragments remained well in position as long as the boy lay flat on his back, but as soon as he began to move about and raise his head and shoulders projection appeared, in spite of all that could be done in the way of support to the back. After the first week the temperature was practically normal, and there was no trouble with stomach, bowels, or bladder. During his long rest in bed great wasting of the muscles and stiffening of the knee and ankle joints occurred. Massage and electricity were regularly used to prevent or overcome these difficulties. The various stages in his recovery are noted as follows in the ward journal:—

"15th February.—The wound on the back has been dressed on several occasions since last note was made. It is granulat-

ing well. The temperature during past week has been quite normal. There is entire absence of pain, no trouble with bowels or bladder, and patient can move his toes very freely.

"1st March.—Wound dressed. Discharge considerable. Granulations healthy. Battery discontinued, as patient suffered pain after its use.

"22nd March.—Wound dressed. Movements of back while being dressed are becoming much freer, and patient seems to move his toes more easily.

"31st March.—Patient can now turn himself on his side without help.

"21st June.—Wound not quite healed, granulations tend to become exuberant, and have had to be removed repeatedly. There is considerable improvement in motor power—patient being now able to move his legs freely in bed, from the hip and knee joints, and can assume a partially sitting posture. He has foot-drop and his ankle-joints are very stiff.

"26th August.—The wound in the back is now healed—patient is now able to crawl about the floor on hands and knees. The ankle-joints were flexed under chloroform.

"20th October.—Patient is now able to stand erect on his feet if supported, and can walk, supporting himself by the bed or stool.

"5th November.—He is now able to walk a little with crutches, and is getting stronger every day. The nutrition of his muscles is distinctly better and his limbs thicker.

"20th November.—Patient now goes about the wards easily on his crutches.

"1st December.—Patient has been several times down stairs walking in the quadrangle with his crutches. He comes up stairs by himself.

"15th January.—Patient can stand erect, and even walk a few steps without any support."

His progress has thus been steady but slow. He was first able to turn on his side by swinging round his pelvis, then to sit up, then to raise himself on his hands and knees in bed, then he crawled on the floor; then raising himself and supporting the upper part of his body on a stool or on the bed, he rested his weight on his feet, then he began to walk with assistance, and lastly, he learned to balance himself on his feet. I fully expect that before long this training of his muscles will be perfect, and that he will have normal control over his movements.

I believe the injury to the cord was chiefly inflicted on the anterior columns, about the middle or lower part of the

lumbar enlargement, hence the prolonged loss of power and wasting of the muscles that ensued. It was interesting to watch the gradual progress of recovery, control over the muscles (except those of the toes) being gradually regained from above downwards. The recovery of size and strength on the part of the muscles has also been very noticeable. His chief difficulty in standing and walking is now in his ankles and feet, the movement of the ankle and tarsal joints being still very limited.

NOTES OF A CASE OF NEPHRECTOMY FOR PYONEPHROSIS.*

By D. N. KNOX, M.A., M.B.,
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THE kidney now shown was removed from Mrs. H., aged 29, on 19th November last, in the Nurse's Home, Renfrew Street. The history of the case is as follows:—Up till last July, Mrs. H. was a healthy woman, though never robust. She has two children, aged 5 and 2 years respectively; both are healthy, and the confinements were easy. Menstruation has always been, and still is, regular. In July last, she was from home for three weeks, and appeared to have caught cold just before her return home, for on the evening of her return, she sent for Dr. Milroy of Kilwinning, her usual attendant, to see her. He found her quite feverish and suffering from a severe pain in her left side. During the night she was sick, and vomited several times. On the day before her return home, her urine was dark, like porter. These symptoms continued for about a fortnight, gradually getting less pronounced, but leaving her very weak and unable to leave her bed. At first, also, a diffused hardness was felt over the regions of the transverse and descending colon, but as this wore away, a circumscribed swelling was felt by the patient in her left lumbar region. There had never been any swelling in the part before. This swelling gradually increased in size. It was at first uniform and smooth in outline, hard and tense, but gradually becoming fluctuant. The patient states her urine was never dark coloured after the first day of her illness, but sometimes was quite milky. For two days she suffered slightly from fre-

* Read before the Glasgow Medico-Chirurgical Society, 30th January, 1891.

quency of micturition, but with this exception, she never needed to rise at night. She never had any pain in bladder, or difficulty in micturition. The bowels were slightly costive.

On admission to the Home on 13th November, I found she had a large tumour in the left lumbar region; as she was very thin, its outline could be made out with great ease. It seemed as large as a child's head, occupied the position of the left kidney, and reached to within one inch of the middle line in front. It was slightly movable and distinctly lobulated; some of the lobules were fluctuant, others hard and elastic only. Patient looked healthy. Tongue clean, appetite fairly good. Pulse 88. Heart action slightly irregular and weak. Patient says she had a slight cough since girlhood, but that it has never affected her health. R.M. slightly increased, breathing rather puerile over front of chest.

The total urine voided in twenty-four hours after admission measured $27\frac{1}{2}$ ounces; sp. gr. 1018; reaction acid; of straw colour; contains a little pus, albumen, and blood. The average daily amount of urine passed during four days on which it could be measured was $27\frac{1}{2}$ ounces, and the average amount of pus was $2\frac{1}{2}$ ounces. Dr. Alexander Patterson also saw the patient in consultation, and, after a very careful examination, agreed with me that the case was one of pyonephrosis, but thought there was probably some other condition present, the nature of which was not clear. I therefore, with his sanction, determined to explore the kidney, drain it, or, if necessary, remove it. The operation was performed on 19th November, Dr. Patterson kindly assisting. By a curved lumbar incision the kidney was easily reached. On opening the capsule, the kidney was seen to consist of masses of small thin-walled cysts very firmly adherent to the capsule, which latter consisted of firm fibrous tissue devoid of fat. The capsule was stripped off with the forefinger with some difficulty, and many of the large cysts were broken down in the process, and the kidney when finally removed had thus lost largely in bulk. The rupture of the cysts also gave exit to a considerable amount of pus, but there was little hæmorrhage, and not more than the usual difficulty in securing the pedicle. The cavity left by the kidney was large and required careful cleansing; drainage tubes were inserted, and the superficial wound stitched and dressed. During the next forty-eight hours there was considerable oozing, and the dressings were changed daily. Patient slept well during the first night, and during the first twenty-four hours passed 18 ounces of bloody urine. During the

next twenty-four hours she passed 32 ounces of urine containing 2 ounces of pus. There was also slight sickness and vomiting. On the third day the urine measured 35 ounces, and thereafter the daily amount passed averaged from 26 to 40 ounces. The amount of pus for a few days was as much as 4 ounces daily, but it rapidly fell to about 1 ounce, at which it remained for three weeks, when it fell to half-an-ounce. There is still a little present, and the daily average of urine is $33\frac{1}{2}$ ounces.

The patient left the Home on 24th December last, the wound being almost healed and her general health very much improved.

The kidney has lost much of its original size, but its general characters are obvious. It is almost entirely composed of thin-walled cysts of various sizes, some being almost microscopic, others an inch or more in diameter. Some of the cysts that were torn and destroyed in the process of enucleation were much larger still. These cysts contained for the most part a clear, pale, limpid fluid. In some of the larger cysts pus is still to be seen. No calculi were anywhere to be found. In some places there is a small amount of apparently normal renal tissue, but the microscope shows that even there very minute cysts are in process of formation. The microscopic appearances will be described by Dr. Milroy, who has made a careful examination of the organ.

So far as one can judge from a naked-eye view of this kidney, it seems to have been affected with cystic degeneration, and that probably of old standing, but which gave rise to no symptoms till July last, when a chill set up a suppurative process in the pelvis. This spread to some of the cysts, converting them practically into abscesses, and so led to the rapid increase in size of the gland. If the cystic process be congenital, as it so often is, we would expect the other kidney to be affected also; but, so far, the most careful physical examination fails to detect the slightest enlargement in it, nor have there been any hæmorrhages except the one recorded, nor any other alteration in the character of the urine except the presence of pus. This pus may come from the right pelvis, but I think it is more likely to come from the stump of the left pelvis. The patient, meanwhile, is continuing steadily to improve in health. Had cystic disease been known to exist, it would have been held by most surgeons to contra-indicate operation; but this case shows that, at any rate where the symptoms are chiefly unilateral, benefit may be obtained from operation.

FURTHER OBSERVATIONS ON CHRONIC INFLAMMATORY LESIONS OF THE BRONCHI AND ON BRONCHIECTASIS.*

By A. G. AULD, M.D.

(*From the Pathological Laboratory of the Western Infirmary.*)

(*Illustrated.*)

THE naked eye appearances of lungs the seat of chronic bronchitis have been so frequently described, and are so well known, that further allusion to the subject is here unnecessary. It may be remarked, however, with regard to the bronchi themselves, that they are generally full of purulent secretion, their walls thick and injected, and on squeezing out the retained pus, fibrous striation or delicate rugæ are visible through the transparent basement membrane. In other cases, fibrous septa, bands, or bridges are stretched over the wall, and occasionally small recesses or diverticula are seen in it. In emphysematous parts, the bronchial walls are dilated and thin, devoid of injection and also of purulent secretion.

It is the purpose of the present communication to deal with certain microscopical lesions of chronically inflamed bronchi, which hitherto have either been undescribed or else imperfectly understood. In doing so, I must begin by referring to my previous researches on this subject,† in which I described as occurring in cases of true bronchitis, as apart from merely cedematous or chronically congested states, an hypertrophy of all the constituent tissues, but more especially of the epithelial tissues, which latter I regarded as akin to the atypical epithelial growth described by Friedländer as occurring in vagus-pneumonia of the rabbit, and which he concluded to be a derivative by ingrowth of the surface epithelium. Appearances similar to those described by Friedländer have recently been produced by Cox,‡ by inducing a chronic bronchitis in animals; at anyrate he affirms their identity, and Prochownick, working under Friedländer, described a similar lesion in certain phthisical lungs which he was unable to explain. According to my observations, atypical

* Read before the Pathological and Clinical Society, 9th March, 1891.

† *Glas. Med. Journ.*, May, 1890.

‡ Ziegler's *Beitrage zur Path. Anat.*, band v.

epithelial growth is to be observed in more forms than one. It is invariably associated with irritant or inflammatory states, and it assumes different forms according to the nature and degree of intensity of the irritation. Further, it seems probable that the anomalous growth has, under certain circumstances, and when of long duration, a tendency to assume the characters of epithelial cancer.

Briefly described, the bronchial lesion referred to consists in a luxuriant growth of the surface epithelium, the cells being much increased, both in number and in size; in a great multiplication of the acini of the mucous glands, which may be seen sprouting into the remotest parts of the adventitia, and in some parts occupying almost the whole bronchial wall; and lastly, in a multiplication and dilatation, frequently cystic, of the gland ducts. The walls of the largest ducts are lined by ciliated columnar cells, which attain their greatest development in the cyst-like dilatations where they are associated with mucus-secreting goblet cells. The cystic dilatations seem to be of the nature of retention cysts, and they do not show any intra-cystic papillary growths, as are found in certain gastric polypi and in uterine cystoma. Although at first I regarded this phenomenon as nothing more than an expression of an ordinary subacute or early chronic inflammation, further observations have led to a modification of this view, and have tended to show that while an epithelial and glandular hypertrophy does undoubtedly occur in the early stages of chronic bronchitis, yet that it is the exception, and not the rule, to find such an epithelial growth as is herein described, and which in certain respects resembles adenoma. Further, in such cases, the thin-walled ectatic bronchi in the emphysematous parts are richly clad with epithelial cells, although their other elements are almost entirely wasted away—a discrepancy which never exists in ordinary cases. Can, therefore, this lesion be indeed regarded as an inflammatory hyperplasia? That it is not so, seems evident from the epithelial luxuriance in non-inflamed parts, as also from the fact of there being in the thickened bronchi an actual infiltration of new gland tissue; and again, it differs from the glandular hyperplasia found in inflammatory mucous membranes in general, such as occurs most typically in the stomach, for in such the epithelial development is subsidiary to the new growth of fibrous tissue. In some cases, however, of long continued inflammatory hyperplasia of the gastric mucous membrane, the glandular structures in connection with the papillomatous

outgrowths have been to a certain extent new formed, and have hence been designated by some—as, for instance, Cornil and Ranvier—as cylindrical-celled adenomata. Others, again, whether the glands are actually new formed, or whether the glandular increase is in the form of an intra-cystic papillary growth, would consistently deny the term adenoma as applicable to such cases. Herein lies the difficulty. Wherein does an adenoma differ from a glandular hyperplasia? Not in being circumscribed, for tubular adenoma of the liver is not circumscribed. Nor are there, in view of the present contradictory definitions of the term adenoma, well marked differences in the arrangement of the tubes or acini, or in the characters of their contained epithelium. But when, as in the present case, the glandular development is associated with productive changes in the other component tissues of the organ, and when, further, the new gland tissue seems to secrete a fluid resembling the normal, then it may justly be concluded to be outside the category of the adenomata. Consequently, as the epithelial lesion in the present instance fails to conform to inflammatory hyperplasia on the one hand, and to adenoma on the other, it falls to be classed as what, for lack of a better name, may be termed an atypical epithelial growth. It is conceivable that in certain cases, and probably those presenting individual peculiarities, the effect of persistent irritation would be to develop an abnormal and disproportionate growth of the secreting structures. I may refer to a similar condition observed in the mucous glands of the bile ducts, in a remarkable case observed by Raynaud, to which Goodhart refers in his *resumé* of diseases of the liver in the New Sydenham Society's Atlas. Reference may also be made to the peculiar lesion described by Fairlie Clarke as *ichthyosis linguae*.* It consists in a slowly spreading, diffuse, painless growth of the epithelium of the tongue and inside of the mouth. From the accumulation of the effete cells, the surface of the tongue assumes a patchy whiteness. Mr. Clarke ascribes the lesion to inflammatory irritation, and affirms that after existing for some years, it tends to assume the characters of epithelial cancer. The justification of placing this disease alongside the epithelial lesion of the bronchi, may be doubted, but it at any rate cannot be denied that in respect of causation and eccentric mode of growth they are curiously alike.

Without stopping to consider the changes in the muscular, fibrous, and cartilaginous tissues in the earlier stage of ordinary

* *Brit. Med. Jour.*, 1874, vol. i, p. 346.

chronic bronchitis, I proceed to offer a few observations on the second or atrophic stage of the disease. In general, this is found to consist in a gradual fibroid degeneration of the various structures. Many of the cartilages, however, become necrotic, or else get infiltrated with lime salts—a true bony metaplasia, though affirmed by some authors, being in the highest degree improbable. The majority of the cartilages, however, undergo fibrous transformation, not by ingrowth from the perichondrium, but by the development of fine glistening fibres throughout the ground substance. In some such cases, the capsules have disappeared, and the enclosed cells show proliferative changes, while in others the capsules are greatly thickened, and the enclosed cells show degenerative changes. This fibrous transformation is a true degeneration, and has nothing in common with a metaplasia into fibro-cartilage. In the light of Thin's* researches, the phenomenon is not difficult of explanation. By a special mode of preparation which consists in immersing pieces of fresh hyaline cartilage in solution of caustic potash, at a temperature of about 105° F., Thin has demonstrated that its structure is similar to that of the cornea—that is to say, it is built up of parallel laminæ, having an average thickness of a human red blood corpuscle. Now, these laminæ consist of bundles of fibrillæ, each bundle being invested by a thin membrane, to which numerous elongated nuclei are applied.† Consequently, the apparently hyaline matrix being in reality composed of fine nucleated connective tissue fibres, it is evident that the appearances in the fibroid bronchus are due to the accession of coarse indurative changes, which end in the production of a scar-like tissue.

As regards the glands, a fibro-cellular growth derived chiefly from the perivascular tissues and from the perichondrium, dissociates the individual acini and they gradually disappear. The new growth appears to come out in stems, and traverses the gland like a branching tree. In some cases, there is abundant leucocytal infiltration of the wasting glands, occurring usually in clusters. Also, in many cases, a number of acini coalesce into a mass, after the manner of the acini in the adenomatous stage of rodent ulcer; such a mass sometimes becomes encapsulated, the wall being lined by nuclei, whose only distinguishing feature from the tissue nuclei consists in a more intense reaction with staining media. This atrophy of

* *Quart. Journ. of Microscop. Science*, No. 16, N.S.

† The same observer has described a similar structure in the case of smooth muscular fibre.

the glandular tissue, when it occurs unequally, largely accounts for the local depressions which many authors seem with difficulty to account for. Not only so, but it is one of the chief factors in bringing about the peculiar atrophic lesion, described especially by Dr. Grainger Stewart,* in certain cases of bronchiectasis, which Dr. Stewart regards as of constitutional origin. "In this lesion," he remarks, "the atrophy advances in a very remarkable manner, particular portions of the wall wasting and others retaining their natural volume; the latter parts form bands or ridges elevated above the surrounding mucous membrane. As the atrophy of the neighbouring parts advances, these become more and more prominent, drawing gradually closer till they resemble a mesentery, connecting the unatrophied band with the bronchial wall. At length, apparently by gradual absorption, the mesentery-like membrane disappears, and the band is left as a bridge stretching across the lumen of the dilated tube." In a case which lately presented itself, the above description seemed justified to the full, for in the unatrophied portions of the wall the normal structures were fairly preserved, and no *active* inflammatory process could be detected, though from the thickening of the walls of the vessels, it was apparent that such had existed in the past. At the borders of many of the atrophic spaces were wasting glands, but, in addition, the connective tissue of the wall appeared to be crumbling down. The wasting of the connective tissue seemed to begin by widening of its interspaces, and shrinking of its nuclei. The bundles thus separated had a hyaline or vitreous appearance, and were so brittle, that at many points they showed a broken edge.

But the ultimate result of bronchitis is not invariably fibroid atrophy; in some instances, the chronic indurative progress of the disease is intercepted by acute exacerbations. When these are frequent and severe, the bronchial wall becomes throughout infiltrated with cells, derived chiefly from the vessels. These cells are of low vitality and show degenerative changes, so that in many parts the bronchial wall is abscess-like, but the basement membrane usually persists, and spindle-shaped epithelial cells are seen sprouting from it.

I now turn to the consideration of certain inflammatory lesions of the bronchi, which either accompany or flow from lesions of the lung. Allusion may first be made to that accompanying chronic pneumonia, under which name may be included, for present purposes, the various forms of indurated lung, excluding the tubercular. As in the ordinary form of

* *Edinburgh Medical Journal*, vol. xiii.

bronchitis, the tissues primarily involved are those of the mucosa, and very specially the epithelium, so in chronic pneumonia exactly the reverse occurs. Herein, the peribronchial fibrous tissue is the principal seat of the disease, the innermost structures being affected secondarily and to a less extent. It is a fact, though not generally known, that in many cases of acute pneumonia, which are met with on the *post-mortem* table, the nuclei of the fixed cells of the fibrous framework of the lung and the pleural matrix show division and multiplication. When the pneumonia becomes chronic this cellular multiplication leads to tissue formation. In the case of the bronchi, a peribronchitis is set up which connects itself with the similar changes in the coarser septa and perilobular membranes, but does not extend inwards to the mucosa, for the same reason that the pigment in deeply pigmented lungs never passes inwards from the peribronchial fibrous tissue, however dense its infiltration there may be. The changes in the mucosa are in fact due to the congestion which occurs secondarily within it, and likewise to the irritating or corrosive effect of the transuding serum, just as inflammatory changes are seen to occur in the skin, when serum trickles over it for some time.

But when the induration follows in the wake of tubercular infiltration, the corresponding bronchial lesions partake of a different character, for in such cases the fibroid changes are associated with the virulent irritation of the tubercular virus. In bronchiectatic fibro-tubercular lungs, the condition of the bronchial walls varies in accordance with that of the surrounding lung territory. If the latter be consolidated from tubercular inflammation and infiltration, the bronchi will, as a rule, show thickened and infiltrated walls; on the other hand, if a district of lung show atrophic or emphysematous change, the enclosed bronchi will be thin-walled and ectatic. The remarkable histological features which the bronchial walls may present in such lungs will be the better appreciated by making particular reference to a case in which they occurred most typically. Dr. Coats conducted the *post-mortem* examination, and his report on the lungs is as follows:—"The left lung is firmly adherent throughout. At its apex is a large irregular cavity which has generally a smooth lining; elsewhere in this lung there are a few smaller cavities, some of them at least having bronchiectatic characters. There is no appearance of recent caseous infiltration or of recent softening. The lower lobe of this lung is uniformly beset with grey nodules. The right lung is firmly adherent at the apex and

posteriorly ; less firmly in front, where there are some remains of fibrinous exudation. There is a large cavity at the apex with a distinct lining, and in all other regions of the lung there are numerous cavities having the characters of bronchiectatic cavities, and often showing ampullar dilatations. In some of the cavities the mucous membrane is partially retained. In this lung, besides, there are numerous tubercular nodules, many of them caseating." Now, from this description it will be seen that the cavities are divisible into two classes, the one class consisting of healed tubercular excavations, the other of bronchiectases. Of the latter some plainly showed their bronchial origin to the naked eye, in many of which were numerous prominences, and bands or bridges of a fibrous consistence. But others, and these the majority, gave no naked-eye indication of a bronchial nature. They were simply irregular channels and caverns tunnelled out in the dense pulmonary ground tissue, always partially and sometimes totally obscured by inspissated contents. The channels generally intercommunicated, and a few ended blindly. First, I shall describe the bronchi, showing the prominences and bridges, and the mode of their formation, which differed *in toto* from that previously described as atrophic. In general, the various structures of the wall were fairly well preserved, the cartilages especially, but the adventitia was wasted and the surrounding pulmonary tissue was collapsed and full of caseating tubercles. The deeper structures of the bronchial wall stained well, but towards the surface the tissues showed considerable resistance. The prominences of the mucosa and the bridge-like bands were chiefly composed of a granulation tissue. Of at least the majority of them, it was evident that they did not result from wasting of parts of the wall ; it was evident that in this case the excessive growth of granulation tissue was the main factor in their production. And how were the bridge-like septa passing from point to point in the wall produced ? Clearly in one way only. Two papillary granulation-tissue outgrowths, springing from points considerably apart, proceeded to grow towards each other, and *when their summits met, organic union took place, by the vessels of the granulation tissue piercing the basement membrane.* Usually one of the outgrowths outstripped the other, and not infrequently there was only one large outgrowth which had attached itself to an elevated part of the wall. That the bridges were formed in this manner is, in my opinion, irrefragably demonstrated by the fact of the basement membrane lining the viaduct formed by the bridge, which, in size, would

usually allow the passage of a probe; and though failing to observe the actual process of union in the present case, it was not many days until I had an opportunity of examining the lungs from another case, in which the finest possible demonstration of this union was to be had. So far as I can find, this mode of formation of the bridges has not been hitherto described. Cornil and Ranvier* figure a dilated bronchus, showing papillary outgrowths and an enclosed cavity, but they make no mention of this process.

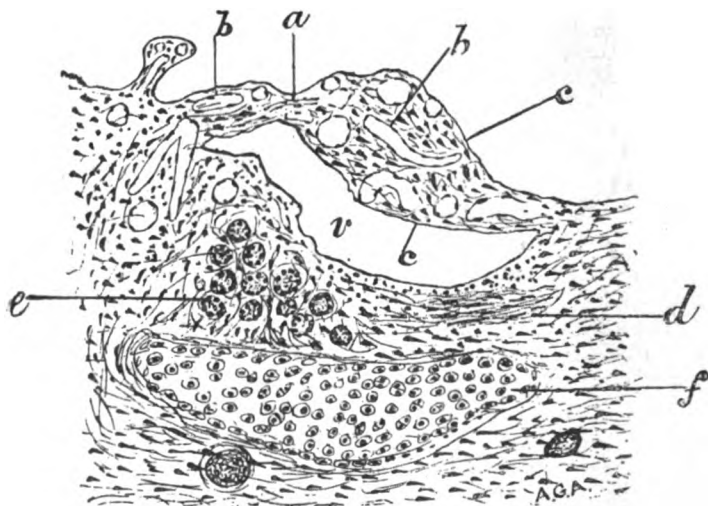


FIG. 1.—WALL OF BRONCHUS SHOWING FORMATION OF BRIDGE.

a, Place of junction of granulation tissue outgrowths, a slender capillary blood-vessel is seen passing across; *b*, vessels of the granulation tissue (to the left a small outgrowth is seen); *c*, basement membrane, which also lines the viaduct, *v*; *d*, remains of the muscularis; *e*, gland undergoing atrophy, the stroma invaded by fibroblasts; *f*, cartilage.

Next, as to the structure of the walls of the channels and caverns, which to the unaided eye had no bronchial features. In the case of the channels it consisted of a very thick belt of new formed tissue, which streamed out in greater or lesser rays along the coarser septa, the perilobular membranes and alveolar walls. The innermost portion of the wall, and that for about a third of its entire thickness, was exclusively cellular, at some points taking the form of thin, close-set papillary processes. It resembled the superficial part of a pyogenic membrane. The cells had the characters of degenerated granulation cells, being large and granular, yet opaque and

* *Manual Path. Hist.*

with ill-defined nuclei, which condition was most probably due to the retention of decomposing secretion. The alveoli surrounding the wall, for the greater part of its circumference, were filled with inflammatory products of various kinds. Some contained large proliferated epithelial cells, mingled with leucocytes and ill-formed fibrin; others were filled with blood; others were packed with cells resembling those

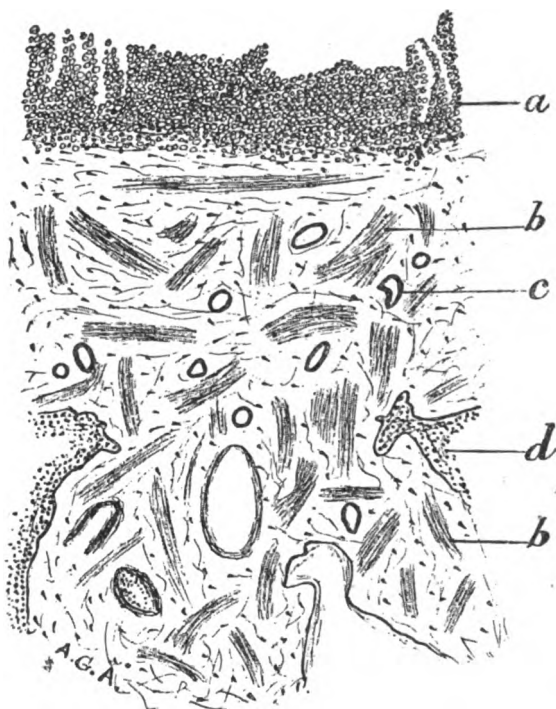


FIG. 2.—WALL OF BRONCHUS, SHOWING ABERRANT GROWTH OF SMOOTH MUSCLE.

a, Granulation-like cells forming innermost layer; b, smooth muscle in the midst of the connective tissue; c, thickened vessel; d, cellular space in wall.

characteristic of the purulent infiltration of pneumonia; while the contents of not a few gave a homogeneous appearance, apparently from necrotic change. Here and there amongst the alveoli were caseating tubercles. For a small part of its circumference the wall was bounded by fairly crepitant lung tissue. Now, the question arises—Is the bronchial origin of the wall susceptible of histological proof? No clue could be obtained from the inner cellular

layer, but in many parts the deeper fibrous part showed a very remarkable structure. It was in great part composed of *irregularly disposed and interlacing bundles of smooth muscle*, which likewise has invaded the radiating bands. The aberrant muscular fibres, in their disposition to the fibrous variety, caused the tissue to assume somewhat of a leio-myomatous appearance. That this muscular growth supplied the histological proof of these thick walls being transformed bronchi will probably be admitted by most; and, if it be admitted, it presents nevertheless a problem both in respect of its remote causation and its immediate derivation. It is not such a muscular development as could possibly have arisen from exaltation of function; it seems rather to be due to a peculiar irritation, and so to resemble the atypical epithelial growth referred to. Here again we have to confront the problem of the relation which such a muscular growth bears to the true muscle tumour. As to its immediate derivation, difficulties no less great present themselves. Do the fibres spring from pre-existing fibres, or are they derived from connective tissue corpuscles? As bearing on this, mention may be made of the growth of smooth muscle fibres observed by Arnold* and by Wolf† in inflamed pleura and in pericardium, which they state to be derived from connective tissue corpuscles. A similar statement is made by E. Newmann,‡ and Ziegler remarks that "it appears certain that cells having at least the structure and appearance of non-striated muscle cells are developed from connective tissue corpuscles," though he adds that "no proof has been given that they have corresponding physiological qualities." Bardeleben affirms that he has traced the development of smooth muscle fibres between the cells, quite independently of the nuclei. Reference may also be made to the alleged muscular development in brown induration of the lungs. In this affection, Delafield§ has affirmed that the alveolar walls derive their thickness from the development within them of smooth muscle, and, in an examination recently made, I can at any rate vouch for the presence of staff-shaped nuclei.

In favour of the view that the aberrant fibres are derived from pre-existing ones, is the fact that the muscular layer of the bronchus is exceedingly persistent in even the most destructive processes, as in suppurative bronchitis, being indeed about the last structure to disappear. And a still stronger argument consists in the fact that the walls of the caverns, which have

* Virchow's *Archiv*, vol. xxxix.

† Quoted by Arnold.

‡ *Arch. d. Heilkunde*, x.

§ *Studies in Path. Anat.*, vol. i.

been referred to, did not show any such structure, though in all other respects they were similar to the walls of the channels. Outside of the considerations already adduced in favour of transformed bronchi, I may mention that similar appearances to those described are to be found in the Fallopian tubes in chronic salpingitis. This is well shown in the excellent plates of Wyder,* the innermost part of the tube being composed of granulation cells, generally showing a papillary arrangement, outside of which is a great hyperplasia of the muscular tissue.

In the portions of the lungs in which the disease was least advanced, the tissue was fairly crepitant, but was strewn with tubercle. The bronchi were ectatic, often showing the moniliform arrangement, and their walls were smooth and membranous, though at points ulcerated from tubercular infiltration. The basement membrane invariably persisted, generally also remains of the muscularis, and outside this was a thin connective tissue layer. Occasionally atrophic glands and cartilages were visible.

I shall next refer to certain very peculiar inflammatory lesions of the bronchi, as they occurred in a lung whose base was the seat of two gangrenous cavities communicating with one or more bronchi, and with the pleura. The whole lower lobe was bronchiectatic. From the nature of the bronchiectatic lesions I infer that an old bronchial affection preceded the development of the gangrenous cavity, and on turning to the clinical history there was evidence of this. For when a lung becomes secondarily infected from such a source, it tends to give rise to a virulent form of broncho-pneumonia—an insufflation pneumonia—which causes a rapid destruction of the tissue. In the present case, the bronchi, to the naked eye, could be classed in two principal groups. In the one, they were greatly injected, thick-walled, full of inspissated pus, and the surrounding pulmonary tissue was consolidated. The other group consisted of comparatively thin-walled, much dilated bronchi, having a white lining membrane. Microscopically, the members of the first group were found to be excessively cellular, and a new fibro-cellular tissue had destroyed and replaced all the component structures, with the exception of some muscular remains. In a few cases, less advanced, wasting glands and cartilages were noticeable. The mucosa presented a most fantastic appearance. It had sprouted up into a papillary granulation-tissue, resembling a range of high

* See *The Lancet*, 17th January, 1891.

mountains. It was here that the union by their summits of these papillæ were so well seen. The vessels of these papillæ were excessively abundant. Their walls actually formed the surface of the tissue, and strange to say, numbers of epithelial cells were attached to them; at no part could any trace of the basement membrane be detected. This persistence of the epithelium over the granulation tissue is a very instructive fact. It was not normal epithelium, it consisted almost entirely of spindle-shaped cells, but a few were ciliated. As regards the joining of the papillæ, in some places it was evident that over the arch formed by the union of two adjacent summits, a second union had taken place by still longer papillæ arising externally to the bases of the first. This was proved by the fact of both the enclosed cavities being lined or partially lined by epithelial cells. (Refer to Fig. 1.)

But still more remarkable were the characteristics of the second group. Their wall was of about average thickness, but was composed of a fibro-cellular tissue, almost wholly cellular at its surface, most fibrous at its periphery. The surrounding pulmonary tissue was atrophous and emphysematous. There were no papillary growths in this case, the surface being quite even, but *the normal epithelial layer was replaced by a compound squamous epithelium, resembling that of the skin.* The deepest cells were short columnar or polygonal, and there seemed to be no basement membrane. Several rows of short polygonal cells existed above these, and in some places club-shaped or pyriform cells existed, like those seen in the bladder. As the cells neared the surface they became typically squamous, but there was no satisfactory evidence of horny change, nor yet in the deeper layers of the existence of prickle-cells; and, again, beneath the epithelium, the connective tissue was not thrown into papillæ. Not only were the surface cells squamous, but cavities existed in the bronchial wall, like old dilated gland-ducts, whose walls showed a similar lining. This epithelial metamorphosis in the bronchi has been described by at least two observers. It was observed by Raap in 1850, who described the epithelial squames as larger than those of the buccal mucous membrane; and by Fischer* of Vienna, in 1889, in a case of chronic inflammatory irritation. A similar transformation of the columnar epithelium of the urethra has been described and figured by Posner.† The same observer has described what he terms a dermoid transformation of certain parts of the uterus,

* Zeigler's *Beitrage z. Path. Anat.*, 1889.

† Virchow's *Archiv.*, 1889.

vagina, and larynx, and Marchand, and lately Cabot,* have observed dermoid changes of the mucous membrane of the bladder, which the former regards as derived by ingrowth of the epithelium of the skin; and it seems certain that in cases of perineal wounds this ingrowth may occur. Consequently, such cases are not to be classed in the present category, and the same may in all probability hold good for the *pachydermia laryngis* of Virchow,† which consists in a dermoid or cornified state of the squamous epithelium of the larynx, but not of the ciliated columnar, which caused this distinguished pathologist to conclude that the latter variety was insusceptible of such a change. Again, in the instances of the bladder and larynx, the presence of connective tissue papillæ rendered complete the dermoid character of the transformation. Lastly, it may be observed that in cases of prolonged acute pneumonia, the alveoli usually become lined by two or more rows of squamous cells, but whether this is an exact analagous process may be doubted, as in this case these cells divide and are constantly being cast off, when they take a rounded form. In all the cases referred to, except those wherein extension from the skin could be shown, this change was ascribed to inflammatory irritation. In the case of the bronchi, it might naturally be imagined that the membrane, when subjected to peculiarly offensive irritation, would protect itself in this way. Such was the explanation which seemed satisfactory to Dr. Coats, on examining the sections submitted to him. I feel far from capable of offering any opinion on the matter, yet cannot help believing that deeper causes are at work.

Although in the two classes of bronchi described, the characters of the innermost layers differed widely, yet the deeper fibrous part of the walls in both varieties was the seat of a peculiar formation. It consisted in a number of duct-like spaces, lined by square or short columnar deeply staining epithelial cells. Rather were the cells to be regarded as composed of a large nucleus and a delicate periplast. They rested on the general tissue, without any intervening membrana propria. They chiefly occurred in double longitudinal rows, but not infrequently in circles, in ellipses or in somewhat irregular shapes, and when in rows, they vanished insensibly into the surrounding fibro-cellular tissue. Both in the character of the nuclei, and in their disposition in rows in the tissue, without any membrana propria, these formations presented generally a striking resemblance to the new bile ducts of hepatic cirrhosis.

* *International Journal*, February, 1891.

† *Berlin Klin. Wochen.*, August, 1887.

They also brought to memory the channel polypi of the cervix uteri described by Oldham. There seems to me to be not the slightest doubt but that they represent the remains of the mucous glands—in fact there is abundant histological proof of this. The reason of the adjustment of the cells in rows is to be sought in the compressing of several acini by the growing connective tissue around, and which in its growth tends to a longitudinal arrangement of its fibres. At the same time, in many sections, there were strong grounds for believing that some of the spaces lined by the cells were

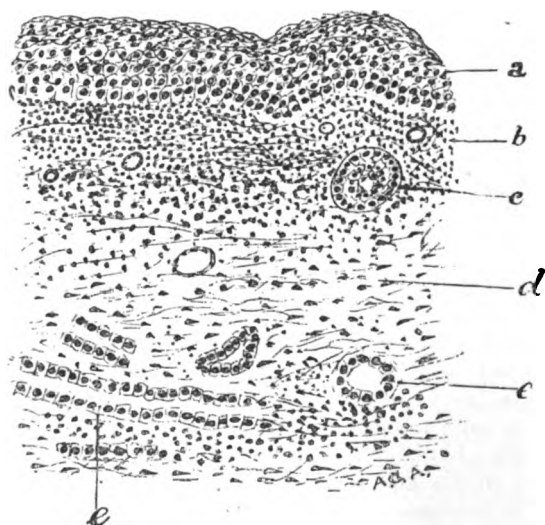


FIG. 3.—SECTION OF BRONCHUS SHOWING SQUAMOUS EPITHELIUM AND 'DUCT FORMATION.

a, squamous epithelial layer; *b*, mucosa, infiltrated with leucocytes; *c*, space in wall nearly filled with cells resembling those of surface; *d*, fibrous tissue, showing fibroblasts; *e*, 'duct-like' formation.

extra-glandular, being spaces left in the course of the granulation tissue metamorphosis, into which the epithelial cells had budded, and hence we must regard this also as a form of atypical epithelial growth. Why in such cases the young gland cells or nuclei should persist amongst the granulation tissue is a problem, and it is not unlikely that it is a problem which is bound up with that of the metamorphosis of the surface epithelium. But elsewhere in granulation tissue growth involving epithelium, a similar peculiarity prevails. For instance, in *lupus vulgaris* an active epithelial growth

is seen extending in lines and clusters amongst the granulation tissue which not infrequently has been mistaken for carcinoma.

From another point of view, may not this duct-like formation serve a good purpose by throwing some light on what takes place in what is more particularly described as biliary or hypertrophic cirrhosis of the liver? Do we not herein find support to the view which denies any actual new growth of ducts? By those, however, who believe with Wickham Legg, Hamilton, Kiernan and others, that the cirrhotic tissue is actually formed by the hepatic cells, it might be objected that the analogy is unfair. It is not so unfair as it seems to be, and as a matter of fact, Professor Hamilton has described the new bile ducts as representing the remains of the liver parenchyma.

The remainder of this contribution will be devoted to a few considerations respecting bronchiectasis; and, as elaborate investigations on this subject have been made by many of the ablest observers, I shall occupy no space by going over ground already well trodden. If the writings of Barth, Biermer, Corrigan, Greenhow, Williams, and others, be consulted, it will be found that there is a general consensus of opinion which regards bronchiectasis as caused either by the normal or an exaggerated pressure of air acting on bronchi whose walls have been damaged by inflammatory or atrophic processes, or else caused by a stretching of the walls by the fibrous tissue bands in cirrhotic lungs—the pleura, by virtue of its adhesions, acting as a fixed point. Of course the accumulation of secretion is also recognised as a factor in many cases. Allusion has already been made to Dr. Grainger Stewart's explanation of the bridges formed in bronchiectasis, but this observer further affirms that true bronchiectasis is a disease *per se*, and is not to be confounded with bronchiectatic conditions which are either associated with or dependent upon pulmonary affections, such as those occurring in bronchitis, in lung induration, and in stricture of the bronchi. The true bronchiectasis he regards as due to a primary atrophy of the wall, of constitutional origin, which causes it to yield, just as an aneurism is formed. Owing to accumulation of secretion, inflammation is subsequently induced, causing villous outgrowths, and so forth. Now I do not presume to say either yea or nay as regards the truth of this theory, but may remark that it must indeed be a difficult matter to determine whether, in a case at all

advanced, the bronchiectasis had begun in this fashion, or whether it was preceded by inflammatory changes. But I have never seen atrophic changes in the air tubes, unaccompanied by similar changes in the pulmonary tissue, which did not give evidence of preceding inflammation; and on the other hand, I have never observed non-inflammatory atrophic bronchi which were unaccompanied by atrophous or emphysematous lung tissue. It seems to me that in general too much stress has been laid on the local changes and on the air pressure, and too little account taken of the influence of the changes in the pulmonary tissue. This seems the more certain when it is considered that most true bronchiectases are usually of the moniliform type, and the pressure of air theory is inadequate to account for this. Furthermore, in many such moniliform dilatations the muscular layer is normal, or at least fairly preserved. But *by placing the collapsed and atrophous lung tissue in the foreground*, it is intelligible how in such cases the bronchial wall will expand to fill up the vacancy, just as in acquired capillary ectasis moniliform dilatations are in this manner formed, as for instance in cavernous angioma of the liver. This applies, however, only to a certain class of cases; in others, the degenerative change in the wall is the main factor, and such may consequently be compared to true aneurisms. In support of the extra-bronchial causation maintained, it is interesting to note that Cohnheim* recognised cases of bronchiectasis in which the dilatation occurred in advance of the *absolute occlusion* of the bronchus, evidently not by accumulation of secretion as a hydro- or pyo-nephrosis is formed, as he remarks that "the destruction of the alveoli preceded the dilatation of the bronchi." Here, then, is a bronchiectasis altogether apart from the pressure of the air.

The only other point in connection with this subject I shall bring forward is as to the distinction between a bronchiectatic cavity and a tubercular excavation. Can a healed tubercular cavity simulate a dilated bronchus? It can, when the destruction of the bronchial wall has proceeded apace until all its characteristic structures are destroyed. But in most of the bronchiectases, some clue will be obtained proving the nature of the case. It may be muscular fibres, or it may be the duct-like formation described, but in most cases, and invariably in the thin-walled sacculated bronchiectases, there is one sure and abiding sign, and that is, the presence of the basement membrane. I do not attach great importance to epithelial-like

* *Lects. on Gen. Path.*, vol. iii, p. 1015.

cells lining a bronchiectatic cavity—there is just a suspicion whether many of the spindle-shaped cells so seen are not leucocytes which have moored themselves to the surface. Also, it is not unlikely that epithelial cells might creep over a false membrane, for it is certain, as was previously mentioned, that they can exist over granulation-tissue, without any intervening basement membrane. However, the presence of the basement membrane puts an end to all doubt. In some of the older writings, it is evident that this structure was either overlooked or else its importance under-estimated, and hence we find Gairdner,* in 1850, declare “that almost all the so-called bronchial dilatations, and all of those presenting the abrupt sacculated character are in fact the result of ulcerative excavations of the lung communicating with the bronchi”—a doctrine which has since received adequate refutation on general and comparative grounds, and whose complete demolition has been accomplished by improved histological methods. If, then, the various histological tests which have been mentioned, fail, the presumption is, that we have to deal with a healed cavity. This presumption is strengthened if the lining membrane be pyogenic in character. Ewart,† in his excellent Gulstonian lectures on pulmonary cavities, describes their walls as consisting of three layers. Innermost is a false membrane, possessing pyogenic characters and resembling the wall of the medullary cavity of bone, in that it sheds its waste products internally, and acquires thickness from without. Next this is a fibro-vascular layer, superficially smooth, and in uninterrupted continuity with the surface of the bronchial tube which opens into the cavity. External to this is a purely fibrous layer. The epithelium and limiting membrane may be seen to stretch over the infundibular bronchial opening. As regards the source of the new tissue forming the walls of such cavities, Ewart regards it as derived by germination of the nuclei pertaining to the adventitia of the intercepted bronchi. To this opinion I take no objection, but see no reason to exclude the alveolar walls from participating in the process.

* *Monthly Journal of Medical Science.*

† *The Lancet*, vol. i, 1882.

BACTERIOLOGY: A GENERAL REVIEW OF ITS PROGRESS AND ITS PROSPECTS.*

By CHARLES WORKMAN, M.D.,

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GENTLEMEN,—In choosing bacteriology for the subject of my paper to-day, I am aware that I lay myself under the charge of talking "shop;" but in this paper I shall endeavour to avoid this danger, by keeping as far as possible to the philosophical aspects of my subject.

As you all know, the subject is the production almost entirely of the last few years, though even centuries ago, it was believed by many that the infectious diseases were caused by some living organism passing in some way or other into the body of its victim.

All attempts to prove this were in vain, as the microscopes of the time were not powerful enough for the purpose, and still more, no means had been discovered by which the various germs present in a fluid could be separated from one another, so that each might be cultivated in a separate portion of nutrient medium and under various conditions, in order that they might be singly studied as to their pathological, morphological, and other characters. To do this was practically impossible, till Robert Koch, a few years ago, devised his epoch-making method of plate cultivation in solid transparent media, such as nutrient gelatine and agar-agar.

My object to-day is not to consider the processes by which the results of this study are attained, but to call your attention to the actual results which have been attained, and to point out what appear to me to be the prospects of further results from this method of investigation.

The life-history of the bacteria has to do with a great many processes in nature, as well as the production of disease. By their means many simple chemical combinations may be produced, such as hydrogen, carbonic acid, sulphuretted-hydrogen, ammonia, &c.

Then there may result from the decomposition of the nutritive media, various ferments or enzymes. For instance, diastase, which causes the change of starch into glucose. Other bacteria produce a ferment which turns sucrose into

* A paper read before St. Mungo's College Medical Society, on Saturday, 21st February, 1891.

glucose. Again, others produce peptonising ferments, by which coagulated albumen or gelatine is rendered fluid or dissolved; and others produce a ferment which brings about the coagulation of milk. Several kinds decompose sugar with the production of lactic acid, others decompose starch and sugar with the production of butyric acid; another kind gives rise to the acetic acid fermentation of æthylic alcohol.

The putrid decomposition of organic compounds is brought about by some of these organisms.

In the course of their life, death, and multiplication, the higher plants and animals produce great quantities of complex carbon compounds in nature. It is the duty of the bacteria to reduce these to simpler organic combinations, or indeed, to the simplest inorganic combinations which can be assimilated by the higher plants; which, with the help of the animals, build up again the complex albumen molecule, and in this way the bacteria maintain the equilibrium of the organic world.

There are two ways in which nature brings about the decomposition of the albumin compounds. One is the chemical decomposition of the albumin molecule with the production of stinking compounds—in a word, “putrefaction;” this, in most cases, takes place without the assistance of oxygen, and is produced by the growth of anærobic bacteria. The other is a decomposition of the albumin molecule which takes place with the assistance of the oxygen of the air, and is caused by the ærobic bacteria.

Putrefaction never gives rise to such simple compounds as are produced by oxidation, such as nitrates, sulphates, and carbonic acid. In agriculture, therefore, the assistance of the ærobic bacteria is required to reduce the complex combinations in the manures spread on the field to those simpler combinations which can be assimilated by plants. These, in order to do their work properly, must have the soil broken up or granulated, so that the air may gain admission; and there must be moisture present, for without this bacteria are unable to grow.

The chemical reaction of the media in which bacteria are growing is in most cases altered by their growth. Many forms cause the production of acid, while others produce alkali.

Among the chemical products of the life processes of the bacteria, a special place must be given to the cadaveric alkaloids or ptomains, which are complex carbon compounds of a basic nature. Some of these are excessively poisonous, and to

them have been given the name toxins. They have been specially studied by Brieger.

These toxins play a very important part in the production of all infectious diseases which are caused by bacteria, as they give rise to the poisoning symptoms which exhibit themselves in parts or organs remote from the part where the bacteria are growing. I may say here that it is likely that the active ingredient in Koch's fluid for the cure of consumption is one of these bodies, and you all know what a powerful poison it is.

Another group of products has lately been discovered by Brieger and C. Fraenkel, not alkaloids but albumin compounds, and to them the name of toxalbumins has been given.

Another effect of the growth of bacteria is the production of various pigments, some of which are of extraordinary beauty. Some bacteria produce a fluorescence of the medium in which they are growing, and others again produce a phosphorescence.

Lastly, some bacteria by their growth give rise directly to various infectious diseases in the bodies of men and animals.

To-day I do not intend to consider the bacteria in relation to their uses in agriculture or the arts, or as regards their botanical relations; but to proceed at once to consider them in connection with the etiology of disease.

In order to prove that any disease is caused by the presence and action of a particular bacterium, it is necessary to show—

1. That the particular species of bacterium is to be found in the tissues or secretions of the victim in a large number of cases of the particular disease.

2. It is necessary to procure the special species of germ free from all other germs, and to grow it in sterilised nutritive media outside the body for several generations, in order to get rid of all the original material which might have some infective poison in it, and to have for investigation only the descendants of the original germ.

3. We must examine into the morphology, mode of growth, and reproduction of the germ, and into its chemical action, &c., in order to satisfy ourselves that it is different from other species.

4. Healthy persons or animals which are liable to the disease under investigation, must then be inoculated with this pure cultivation of the descendants of the original germ, and this inoculation must produce the original disease in these subjects.

5. The tissues or secretions of such subjects of inoculation

must again show the same form of bacteria as were found in the original case of disease.

6. It should be shown that the special disease does not occur in persons or animals without the presence of the special organism.

By the careful study and observation, on these lines, of many investigators in various countries, we have at last arrived at as nearly absolute certainty as is possible in this world of change, that several special diseases are caused by the growth of peculiar bacteria in or upon the tissues of the victim. These are the following:—Anthrax, tuberculosis, glanders, diphtheria, erysipelas, and tetanus.

There are many others about which we are almost equally certain, but from various causes it is not as yet possible to get such absolute proof as in the diseases named, one of the difficulties in the way being that some bacteria will not grow outside the body in any medium that we can find. Another fruitful reason of difficulty is that there are diseases to which no animal, as yet known, is susceptible, and we cannot often use human beings in the experiment. Among these diseases may be named enteric, Asiatic cholera, recurrent fever, leprosy, gonorrhœa, &c.

In looking over the whole subject in this way, a remarkable thing strikes us, that the very infectious diseases which we would expect to see in such a list are peculiar by their absence, viz., Scarlatina, typhus, variola, measles, &c.

There are, it seems to me, two possible suppositions which may go far to explain this very remarkable fact; one is, that it is possible that in these cases we have to do with organisms for which as yet no stain has been found. We know that for some of the bacteria with which we are well acquainted, a proper stain has only been found with the greatest difficulty. It may therefore quite naturally be supposed that bacteria may exist which are far more difficult to stain than those which we already know.

If this supposition be true, the fact would cause the greatest difficulty in our establishing the first of our six propositions in any such case, and would vitiate our deductions from the other propositions if established.

In illustration of this I may remind you of Klein's supposed discovery of the micrococcus of scarlatina when it was likely he had only cultivated one of the common micrococci of pus so often found in various abscesses. And the same sort of thing occurred with Edington and Jamieson when they supposed they had found the bacillus scarlatinæ.

Again, it is quite probable that there may be micro-organisms which have pathogenic properties, and which are not capable of growing in any medium at present known to us; indeed, there is one organism, the spirillum of relapsing fever, which is almost certainly a pathogenic bacterium, and which as yet cannot be grown outside the bodies of human beings or of monkeys. Also, for a length of time it was only possible to grow tubercle bacilli in sterilised blood serum, but now it is found possible to grow them on glycerine agar-agar and on sterilised potatoes, the surface of which has been rendered alkaline. I think, therefore, that steady and persevering endeavour should still be made to find out new methods of staining, and new media in which to cultivate various species of bacteria, as in this way it is still possible that the causes of many other infectious diseases may yet be discovered.

On the other hand, it is quite possible that we may be entirely on the wrong track in looking for the causes of some of these diseases among the bacteria, as these diseases may really be caused, as Robert Koch is inclined to believe, by the lower forms of animal life, such as psorosperms, and not by microscopic plants at all.

If this be the case, we must set about discovering entirely new methods of investigation, to enable us to follow out the life history of these minute organisms, and there is here a great field for any of you who have the energy and the taste for such pioneering work, and I believe it will better repay patient honest search, though perhaps not pecuniarily, than will the goldfields of Africa.

We come now to the question, What is the reason that certain animals possess the power of resisting the growth of these organisms in their tissues, and are therefore said to possess an immunity? To explain this immunity, Pasteur supposes that the substance on which the special organism feeds has become exhausted; while, on the other hand, Chauveau takes the view, that some product of the growth of the bacteria is retained in the system, and hinders the growth of virulent organisms. Another hypothesis is that of Metschnikoff, that the white blood cells, and the connective tissue cells, act as phagocytes, and devour the bacteria.

With regard to the two first theories, I believe they would go far to explain a good many of the phenomena, and it is quite possible that they may both have much to do with the production of immunity where it exists, but far more light is needed on the subject before it is proven that these theories explain the whole facts.

On the other hand, the phagocyte theory of Metschnikoff is almost proved to be a fallacy, because, for example, one of the chief experiments on which he founded his theory was, that if frogs be inoculated with anthrax by inserting pieces of anthrax spleen into the dorsal lymph-sac, after a short time the bacilli were found to have been taken up by the leucocytes, and the frogs did not become affected by the disease, but remained immune; against this conclusion, Baumgarten showed that, if you placed such frogs in an incubator, or kept them at a temperature of 98° F., they lost their immunity and became diseased, and on examining them the bacilli were found in long strings in their vessels. The real cause of the immunity in that case would seem to be the low temperature of the body in these animals. Again, birds, as a rule, seem to possess immunity from this disease, apparently on account of the high temperature of their blood, for if they be cooled by keeping their legs and breasts immersed in cold water they also give way to the disease. Then, again, in the septicæmia of white mice the bacilli are found for the most part in the white corpuscles, and yet the disease is most fatal to these little creatures. Therefore, their being taken up by the corpuscles has not rendered these animals immune.

With regard to immunity in the case of tuberculosis, Koch found that his fluid (tuberculin), when injected into guinea-pigs, conferred an immunity which hindered them from taking the disease when they were afterwards inoculated with pure cultivations of the tubercle bacillus. The fluid does not seem, however, to act in this way when injected into the subcutaneous tissue in man, for it has already been found, it would seem, that after a part has been apparently healed by its means, which had been affected with lupus, the disease may return and show itself active.

I now come to the question of predisposition, which is a very important one in the study of the bacteria in relation to the etiology of the infectious diseases.

We know, in the first place, that there are certain species of animals which are liable to be affected by certain infectious diseases; other species are not liable to these same diseases, while they are, or may be, liable to diseases that do not affect the first species. For instance, white mice are rapidly affected and killed by the bacillus of "septicæmia of white mice," while most other animals are entirely unaffected by that bacillus.

From the knowledge of this fact, a theory has been propounded to explain predisposition among individuals of one species, by supposing that a constitutional difference of an

analogous kind exists between the individuals, as exists between the different animal species. This is not, in my opinion, very likely, though it is possible, for it is contrary to our knowledge of experiments on animals; for we know that any guinea-pig, unless it has been previously rendered immune by some artificial inoculation, will with certainty succumb to an injection of anthrax bacilli. Any rabbit, no matter how healthy, can with perfect ease be infected with tubercle by introducing the bacillus of tubercle into the anterior chamber of its eye.

An example from botany, instanced by de Bary, will indicate how the clinical phenomena which seem to support this theory may perhaps be explained. The common garden cress *lepidum sativum* is often attacked by a relatively large parasitic fungus *cystopus candidus*. As a result of this, there is great degeneration of the plant, swelling and twisting of the stalk, also often of the fruit; and on these parts, as well as on the leaves, white spots and pustules appear, which afterwards become the spore-forming organs of the white rust of the garden cress.

In a bed of cress there may be ten or twenty diseased plants, which are quite easily distinguished, the rest of the plants being strong and healthy. Although the fungus is giving off countless active spores in a fine dust, these find no suitable soil in which to grow in the adult cress around, which are healthy. If one were to come to a hasty judgment, one might conclude that these healthy plants enjoyed an immunity because they had a predisposition which hindered them taking the disease, or that the diseased plants had a predisposition to the disease. The facts, however, are quite otherwise. Every plant is equally liable to be attacked by the disease, but this liability only exists at a particular period in the development of the plant; when this period has passed, the plant is for ever free from liability to the disease. The germinating seed of the cress unfolds first two little three-lobed leaves, the cotyledons. When the plant is a little older it develops other leaves, and then the cotyledons wither and fall off. Now it has been found that the germs of the white rust fungus find their way into all the cotyledons, and can develop from these into the other parts of the plant, and when they have done so, they develop with the growing plant and produce white rust. The germs of the *cystopus* are able to force their way for a short distance into all the other parts of even the healthy cress, but they are not able to strengthen themselves and develop further, therefore the plant remains healthy. The

few diseased plants in the bed of cress are those in which the cystopus had started, in time to make its way into the rest of the plant, before the cotyledons withered and dropped off.

Some years ago it was very commonly believed that phthisis pulmonalis had very frequently its origin in heredity; that children in enormous numbers were born into the world laden with a predisposition to this terrible disease, so that, in the struggle for existence, they had hardly a chance to escape its destroying power.

We are gradually coming to look upon this disease in a very different light, and to consider that there is a fair prospect that this scourge may ultimately be eradicated by proper sanitary precautions, without hindering the connubial bliss or putting an end to the family trees of tubercular individuals. The tremendous frequency of infection as the cause of this disease is well shown in a book lately published by Cornet of Berlin, and the inefficiency of heredity to explain the facts is strikingly illustrated by a series of cases which have been collected by your President, Dr. John Lindsay Steven, and which, I hope, he will soon see his way to publish.

Dr. Cornet, when speaking at the Tenth International Congress on the subject of the sanitary police regulations to be recommended for the prevention of tuberculosis, said that, in his opinion—"Die Vererbung der Tuberculose von den Eltern auf die Kinder kann in Ausnahmefällen wohl stattfinden: kommt aber in praktischer Beziehung kaum in Betracht, einerseits ihrer ausserordentlichen Seltenheit wegen, andererseits, weil alle dagegen etwa zu ergreifenden Maassregeln, z. B. das Verbot der Heirath phthisischer Personen, von vornherein undurchführbar sind. Disponirende Momente, die ihrem Wesen nach grösstentheils unbekannt sind, bilden keinesfalls eine nothwendige Voraussetzung zur Infection, sondern spielen nur eine secundäre Rolle."*

Gentlemen, it is out of the question for me to attempt to discuss the treatment of these diseases, caused by bacteria, as time would entirely fail me. On one point you may perhaps have expected me to say a little—I mean the subject of Koch's treatment for tuberculosis—but I feel, gentlemen, that I am

* The inheritance of tubercle from the parents to the offspring can, perhaps, in exceptional cases, occur; but for practical purposes it may be left out of consideration. On the one hand, on account of its extraordinary rarity; on the other, because all regulations against it, such as forbidding the marriage of phthisical persons, are impossible to be carried out. Predisposing causes, the nature of which are for the most part unknown, produce in no case an absolute necessity for infection, but only play a secondary part in the production of the disease.

myself far too much in the dark on this subject, to be able in any way to enlighten you. There is one thing to my mind certain, Koch's discovery shows us that there may be means of treating bacterial disease, possibly with success, entirely different from any that have yet been attempted.

In bringing the paper to a close, gentlemen, I wish to acknowledge that I am aware of its many defects, but I shall feel that I have attained my purpose if I have induced a few of you to undertake earnestly the study of these wide and most interesting questions.

ON THE DIGITAL MEASUREMENT OF THE TRUE CONJUGATE IN FLAT PELVES DURING LABOUR.

By R. BROOM, M.B., C.M., B.Sc.

THOUGH there is considerable difference of opinion as to the value of an accurate knowledge of the degree of contraction of a pelvis in deciding the means to be adopted in terminating a case of obstructed labour, there can be little doubt, but that the more that becomes known of the degree of compression of the head which the child can safely stand, of the safest means of applying the justifiable amount of compression, and of the degree of pressure of the soft parts of the passage consistent with the mother's well-being, the more important will become exactitude in the measurement of the degree of deformity.

In the present paper, it is my intention to speak merely of the methods by which the true conjugate can be easily and accurately measured in cases of labour obstructed by contraction of the pelvic brim.

Immediately after the birth of the child, it is generally possible to measure the degree of contraction with considerable accuracy, by introducing the hand into the vagina, and arranging the fingers or knuckles in the conjugate, so that they can be withdrawn unmoved and measured. This method, though giving good results, which are valuable for the management of the next pregnancy and labour, is in most cases of little value before the birth of the child, owing to the undilated condition of the vagina, and to the fact that in lesser degrees of deformity a segment of the head, covered frequently by a caput succedaneum, is generally pressing into the brim.

Of the methods which are at present employed, very few

are at all satisfactory. With regard to the value of the measurement of the external conjugate, Lusk (*The Science and Art of Midwifery*, p. 465) says:—"Baudelocque thought that by deducting 3 inches from the external conjugate in spare women, and $3\frac{1}{2}$ inches in women of fleshy habit, the conjugata vera could be determined. Litzmann has, however, strikingly shown the fallacy of Baudelocque's deduction. In thirty cases where he had an opportunity to compare the measurements of the external conjugate with the length of the internal, as determined subsequently by *post-mortem* examination, he found the mean amount to be deducted was about three and a half inches. However, the amount in individual cases widely varied, owing to differences in the thickness of the bones and integuments, the maximum amounting to 5 inches, while the minimum did not exceed $2\frac{1}{2}$ inches." Spiegelberg, who is even more dogmatic, says:—"There is no definite relation between C.E. and C.V., and it is not possible by deducting a fixed quantity from the former to obtain the latter."

In flat pelves the measurement usually relied upon is that of the diagonal conjugate, and undoubtedly a fair idea of the degree of contraction can be obtained from this measurement. Still, the degree of accuracy by this method is not nearly so great as is frequently supposed.

If any series of measurements of pelves be examined, and the diagonal compared with the true conjugate, one will readily see the extent of the probable error. If seven-twelfths of an inch, which is the average difference, be deducted from the diagonal in the hope of finding the true conjugate, it will be found that there is an error of one-quarter inch in every fifth case; and in rare cases the error is considerably greater. Litzmann (*Die Formen des Beckens, &c.*, Berlin, 1861), gives measurements of a pelvis, in which the diagonal conjugate is 4 inches 9 lines, and the true conjugate 3 inches $9\frac{1}{4}$ lines. Even by taking into account the depth and obliquity of the symphysis as recommended by Spiegelberg, a matter of the utmost difficulty, there is still a considerable possible error.

The idea which is very prevalent, that direct measurement of the true conjugate is not any more satisfactory, is undoubtedly a mistake. The true conjugate may be measured, either by means of a mechanical pelvimeter or digitally. Only a few, however, of the mechanical pelvimeters seem at all suitable for practical work. Earle's, when carefully adjusted by means of the fingers, unquestionably gives reliable results in conjugates of $2\frac{1}{2}$ to $3\frac{1}{2}$ inches; but there is considerable trouble in getting it adjusted properly, and results quite as accurate, if

not more so, can be obtained with much less trouble by the digital methods about to be described.

The methods of Velpeau and Ramsbotham are neither of much practical value from the impossibility of withdrawing the fingers unmoved; and except in exceedingly small conjugates the method of jamming the fingers cannot be relied upon to give very good results.

The essentials of a satisfactory method are that it shall give accurate results, that it can be employed in all conditions, and that it can be easily practised, and without causing the woman much discomfort.

Matthews Duncan considers internal pelvimetry exceedingly difficult in conjugates between 3 and 4 inches, and certainly of present methods the mechanical pelvimeters alone give satisfactory results. It is, however, for such conjugates that the method I am about to describe is best suited. I was first led to adopt the plan in a case in the Maternity Hospital. The patient had been visited as an out-door case, and was brought in on account of the labour being obstructed. On examination, the head was found arrested at the brim, and patient had evidently been in the second stage for some hours, there being a segment of the head and very large caput succedaneum pressing through the brim. Recognising the inapplicability of the ordinary digital methods, I was led to try another which I found exceedingly satisfactory, and by it made the conjugate $3\frac{1}{2}$ inches. By means of Earle's pelvimeter exactly the same result was obtained. After delivery the conjugate was measured by the jamming method, and the same result again obtained. Since this case I have employed the method in conjugates of 3 inches and of $3\frac{3}{8}$ inches, and found it completely satisfactory.

The method of performance is as follows:—Having the patient on her left side and near the edge of the bed, introduce the middle and forefinger of the right hand with the back of the hand towards the patient's front. Place the tip of the middle finger on the sacral promontory, being careful to keep the finger extended, then slide the tip of the forefinger down the side of the middle one till the back of the forefinger comes in contact with the inner side of the symphysis. Having the fingers in this position, by means of the thumb firmly fix the tip of the forefinger against the side of the middle finger. Having withdrawn the fingers in this position, the distance from the tip of the middle finger to a point about one-fourth of an inch above the first joint of the forefinger will be found to be the exact measurement of the true conjugate. This

method is specially applicable to conjugates measuring from 3 to $3\frac{1}{2}$ inches. It has advantages over other digital methods, in that the results are accurate from the fact that no movement can take place in removing the fingers, in that it puts the patient to little or no inconvenience, and in that it can always be employed before the birth of the child.

When the conjugate is between $2\frac{1}{4}$ and 3 inches, the most convenient and accurate method is to place the tip of the middle finger on the promontory with the palmar surface to the front, and the tip of the forefinger on the part of the symphysis nearest the sacrum, then to fix the fingers by pressure of the thumb, to remove and measure from tip to tip.

Under $2\frac{1}{4}$ inches I think the following plan will be found more accurate than the usual jamming methods. While the patient is on her left side introduce the first three fingers and thumb, with the palm of the hand to the front; place the tip of the first on the promontory and the tip of the third on the symphysis, and having fixed them in position by means of the thumb and middle finger, remove and measure.

By one or other of the methods just described, the conjugate of any flat pelvis can be easily measured, and the measurement can be relied on in every case to at least one-eighth of an inch.

ON A METHOD OF EXAMINING THE SPUTUM FOR TUBERCLE BACILLI.

*Employed in the Pathological Department of the Glasgow Royal Infirmary.**

By J. WILSON CAMERON, M.B., C.M.

DURING the last four months, ever since Koch's announcement in regard to the treatment of tuberculosis, the examination of the sputum in all cases of lung and throat affections, with a phthisical or suspected phthisical tendency, has been markedly

* *Note by Dr. J. Lindsay Steven.*—During the past winter, Dr. Cameron has rendered most important service in the work of our Bacteriological Laboratory in the Glasgow Royal Infirmary, and, among other work, has undertaken the examination of the sputum for tubercle bacilli. As the method described in this paper, to which Dr. Workman and myself were introduced during our recent visit to Berlin, has proved one of great utility, I have asked Dr. Cameron to write an account of it for the *Journal*.

The paper was read at the Glasgow Medico-Chirurgical Society on 20th March, 1891, and the discussion will be found under the report of that meeting, in a future issue.

on the increase. This was evident in the Pathological Department of the Royal Infirmary, more especially during the earlier stages of what was termed, rather hopefully, "Koch's cure."

With the limited time at one's disposal, and often over a dozen specimens of sputum awaiting to be stained, examined, and reported on, a change from the orthodox cover-glass method was rather fortunate. The change, one of the results of the visit of Drs. Lindsay Steven and Workman to Berlin, is, in its leading feature, the substitution of the microscopic slide for the cover-glass on which the portion of sputum to be examined is spread.

The advantages are not only time saved in staining, but also the fact that as a slide specimen is equivalent to at least several cover-glass preparations, the single report is of higher value.

The staining reagents used are two, viz. :—

1. Ziehl-Neelsen's stain: Fuchsin, 1; absol. alcohol, 10; aq. carbol. (5 per cent), 90. It is better to have the fuchsin in excess and to filter a sufficiency into a watch-glass as required.

2. Saturated alcoholic solution of methylene blue, in excess as in above.

3. Nitric acid solution, 1 in 4.

The other requisites are :—

4. A stout steel needle mounted in a holder.

5. Microscopic slides.

6. Some arrangement by which slides can be kept warm. I use a water bath, simply because there is one at hand, on which I place a glass plate resting on slips of wood, so as to have an air layer between the bath and the glass. The bath is, as usual, heated with a Bunsen burner.

7. A couple of pipettes, glass rods, and cover-glasses.

The method which is as easy—rather easier in fact—for a dozen as for one, is as follows :—

The sputum to be examined is, if necessary, emptied into a glass dish, and with the sterilised steel needle a likely portion of it is deposited on, and smeared thinly over, half of the slide; one or more portions from different parts of the same specimen may be taken, and thinly spread on the same half of the slide, or mixed indiscriminately thereon.

The slide is then transferred to the glass plate over water bath, and while drying the other slides are similarly prepared. Each is rapidly passed through the Bunsen flame, and with a pipette a few drops of the filtered Ziehl-Neelsen's solution is run over the film and spread with a glass rod. Instead of a

pair of forceps of any kind, I simply rely on the American clothes-pin, which, though a little clumsy, answers the purpose very well. Without any loss of time * each slide is washed in pure water, decolourised in the nitric acid solution, again washed in water, partially dried, and transferred to glass plate. With a pipette the filtered methylene blue solution is now dropped on each slide, and spread as before with a glass rod; this is followed by again washing in water, partially drying with fine cloth, and thoroughly drying over water bath, which completes the process.

A point of detail is that, after the washing in nitric acid solution, the specimens may be washed in alcohol and water, and the process completed as above.

Theoretically, objection may be taken to the use of the glass rod in spreading the staining solution on the different slides. I have never found any evidence of transference of microbes from one slide to the other.

Another point is that, if the slide is too warm, the carbolic acid in fuchsin solution crystallises out, but I cannot say that it interferes much with the staining of the bacillus tuberculosis.

For examination, all that is required is a drop of cedar oil to take the place of the cover-glass; if using a low power this must be smeared over the whole film; if an oil immersion lens is used, a drop or two into which the lens may dip is all that is required.

If it is desired to preserve the specimens, the portion showing tubercular bacilli best is by means of filter paper relieved of any excess of oil; a drop of Canada balsam takes its place, and a cover-glass completes the mounting. The slide is then cleaned with sp. vin. rect. and labelled.

In examining the specimens sent to the pathological department, I have always made use of the $\frac{1}{2}$ semi-apochromatic oil immersion lens of Leitz, for the use of which this method is very convenient.

I may state that I have found this method very useful in connection with other bacteriological work. For example, in plate cultivations, specimens from the different colonies, or from colonies similar in appearance, can be smeared on the slide side by side, dried, stained, and, with a drop of oil as cover-glass, rapidly examined and contrasted. The same with similar growths on other nutrient media.

When the result of an examination for the tubercle bacillus

* When only one specimen is under examination, the fuchsin solution should be allowed to remain at least half a minute in contact with the film.

is *nil*, or when we are asked to examine for elastic tissue as well, we use Biedert's method, which is as follows:—

A tablespoonful of sputum is mixed with double the quantity of water, and 10 drops of liq. potass. or liq. sodæ added, and the whole heated over the water bath to a temperature not exceeding 80° C., stirring occasionally till the whole is thoroughly mixed; this is poured into a conical glass filled with water, and allowed to settle for 24 hours.

By means of a pipette a drop or two of sediment is examined by the aforesaid method for bacilli, and of course unstained for elastic tissue.

Out of about 200 examinations of sputa, Biedert's method has been used in 20, and only once have I found by this method that which was not found by the first method described—viz., the tubercle bacillus.

CURRENT TOPICS.

THE UNIVERSITY CLUB, GLASGOW.—There was a large meeting of University men on 10th March, to inaugurate a social club in Glasgow. Dr. Joseph Coats was called to the chair, and explained how the movement had originated, and what was its present position. He referred to the existing Glasgow University Club, and explained that while the present movement had originated in that body, yet that it had, at an early stage, been dissociated. The Glasgow University Club was entirely friendly to this movement, and even contemplated the possibility of giving up its name to the new Society, which had as its object more of the functions of a regular club. Motions were submitted and spoken to by Professor Jack, Sir John Neilson Cuthbertson, Professor Gairdner, Rev. Dr. Watt, Dr. Ogilvie, and Mr. Aikman, and the meeting, which was an exceedingly cordial one, declared its resolution to form a club. It is intended that the club should not be confined to Glasgow men, but should be open to graduates and alumni of all recognised Universities. It will be the meeting place for social purposes of University men in general. A house will be rented as near the centre of the city as possible, and will be arranged in the usual fashion of a high-class club. It will, no doubt, be difficult to procure premises which are at once sufficiently central and commodious, and within the means of the club, but it is hoped these

will be secured, and the club opened at an early date. Meanwhile, a large committee has been appointed to secure premises and to draft a constitution for the club, which will be submitted to a subsequent meeting. Already over 350 members have joined, and it is expected that before the club is opened there will be a membership of about 500. The entry money has been provisionally fixed at three guineas, and the annual subscription at two guineas for town and one guinea for country members. A large number of medical graduates have already joined, and as the club will be a convenient place of call in town it is expected that the medical profession will take great advantage of it.

PATHOLOGICAL AND CLINICAL SOCIETY.—The seventh ordinary meeting of the Society will be held in the Faculty Hall, 242 St. Vincent Street, on Monday, the 13th inst., when the following cases and specimens will be shown:—Dr. Alex. Napier—supra-renal capsule from a case of Addison's disease; Dr. Alex. Napier and Mr. Maylard—a vermiform appendix excised for recurrent attacks of appendicitis; complete absence of all symptoms a year afterwards; Dr. Newman—cases illustrating the value of the cystoscope for diagnostic purposes.

By an oversight the name of Dr. James Erskine was omitted from the list of subscribers published in our issue of last month. Should the names of any other subscribers have been accidentally omitted, the Editors will feel obliged if they will kindly inform them.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH—PARKIN BEQUEST.—In terms of the bequest made to the Royal College of Physicians of Edinburgh by the late Dr. John Parkin, Fellow of the College, a prize is hereby offered for the best essay, "On the Curative Effects of Carbonic Acid Gas or other forms of Carbon in Cholera, the different forms of Fever, and other Diseases." The prize is of the value of £100 sterling, and is open to competitors of all nations. Essays intended for competition, which must be written in the English language, to be received by the Secretary not later than 31st December, 1892. Each essay must bear a motto, and be accompanied by a sealed envelope bearing the same motto outside and the author's name inside. The successful candidate must publish his essay at his own expense, and present a printed copy of it to the College within the space of three months after the adjudication of the prize.

FOR THE ENCOURAGEMENT OF TOOTH-PULLING.—It is certainly extraordinary for what purposes money is sometimes given, but we know of no such as the encouragement of tooth-pulling. It seems that a gentleman in Kirkintilloch is so impressed with the importance of this object that he has given a donation of £500 and caused a trust to be formed, in order that the victims of toothache may have their enemies removed without cost. The sum given will yield an annual revenue of £20, which will go to remunerate the medical men for their labours. The curiosities of the trust do not end with its unique purpose. The doctors of the place have been asked to undertake the operations under the trust, but the bargain proposed to them is curiously one-sided. Those who accept are to receive a *pro indiviso* share of the fund, provided always that no more than one shilling per tooth be received. That is to say, on no account is anyone to get more than a shilling, but, if the numbers exceed 400 in the year, then they must be dealt with for the total of £20, even though they may be at the rate of a penny a piece. We learn from the "Medical Directory" that there are six medical practitioners in Kirkintilloch, and each would be entitled to £3, 6s. 8d. from the fund. Only two have accepted, and each of them will get £10. One of the acceptors sends a letter in which there is an instructive commentary on the scheme. Last year he pulled over 1,000 teeth, and he anticipates that under the trust a similar number may be extracted by him gratis. Supposing that he charged last year the modest sum of one shilling per tooth, then whereas he earned last year £50, he will be compelled under the beneficent working of the trust to do the same work for £10. The number of teeth available in each person's head is not so great that, at a shilling a piece, the tax on the purses of the lieges would be very serious, but here in order to save this outlay the poor doctor is to be taxed to quite an appreciable proportion of his income. Surely in such a case the sacred name of Charity is much abused. The originator of the scheme with his £20 a year puts pressure on the medical practitioners to subscribe at the rate of £30 a year from each of their private pockets. We have no knowledge of who Mr. Watson Mackay may be, but surely his benevolence might find some other issue. It is generally believed amongst dentists that people in the agonies of toothache are much too ready to sacrifice useful and irreplaceable organs of mastication. If the necessary shilling be a deterrant in some cases, it will frequently serve a useful purpose. We are glad to see that the trust which was formed

for this remarkable purpose showed some scruples in going on with the matter in its existing form, even though one of the members thought that supposing the doctors lost a little, there would not be much wrong.

SHAKESPEARE AND THE MEDICAL PROFESSION.—At the annual dinner which closed the one hundred and ninth annual meeting of the Massachusetts Medical Society at Boston, June, 1890, Mr. Henry A. Clapp gave the following address in responding to a toast (*Boston Med. and Surg. Journ.*, 19th June, 1890):—

Those who credit Shakespeare with all knowledge declare one of the departments of his omniscience to have been a mastery of the medical science of his time. Without assenting to this opinion we may feel tolerably sure of this, that if the great student of human nature—who was of all thinkers the most reasonable and the most intuitive—had been a medical practitioner, he would have practised on the “rational system”; he would have known when to prescribe the “simples operative” which have “the power to close the eye of anguish,” or which are “aidant and remediate” in “distress;” and when to “throw physic to the dogs;” and how to

“Pluck from the memory a rooted sorrow;
Raze out the written troubles of the brain;
And, with some soul-oblivious antidote,
Cleanse the stuffed bosom of the perilous stuff
Which weighs upon the heart;”

diagnose the disease,

“And purge it to a sound and pristine health.”

Mr. Clapp said he had often been accused of bigotry in medical lines, and so far admitted it as to say that he preferred to *die* several times over at the hands of a regular physician to being *cured* by an irregular physician. He would not have intruded his personal sentiment here, but Shakespeare had voiced the same opinion in one of his plays, when the King of France refuses to be treated by an irregular physician.

The admirers of Shakespeare have made as large claims for their author in the science of medicine as in every other science and art, and have even thought that they have found evidence of his knowledge of the circulation of the blood, of red and white corpuscles, and will even next assert that he

refers to hypnotism, when in the "Tempest" Miranda's father speaks of her sleep as "a good dulness."

But the fact is, that Shakespeare does not show any professional and technical knowledge of medicine, not by any means such as he shows of law. In his many allusions to the healing art, he repeats the popular ideas of his day, which he has stored up in his acquisitive and "soaking" mind. To illustrate:—In "Henry the Fourth," the *aurum potabile* (the liquid gold of the books) is mentioned as a panacea. References to the diagnosis of disease by inspection of the urine are mentioned, not by analysis certainly, but clairvoyantly—a common practice among the irregulars of his day, as shown in a conversation between Falstaff and his page. Or again, where in another place Falstaff, who might be supposed to know, mentions potato as a powerful drug.

But in these matters, as in every other, Shakespeare shows many touches of that wonderful saving common sense, that clear intelligence, which in such a mind seems to work as the divining-rod of witch-hazel is supposed by many to work, turning by its own inherent wit to the pure spring of truth, hidden though it may be. Otherwise, how account for the physician's treatment of King Lear, an old man of feeble intellect suddenly brought to acute mania. In the days of the strait-jacket and dark chamber, we have cause for wonder that Cordelia's physician should see that long, quiet sleep, induced with the aid of a mild opiate and gentle influences, might work such a cure that the mania would pass away and be succeeded by a comfortable case of senile dementia. And yet why not all this the likely result of a talk with some great, wise physician of the time, who had quietly outgrown the text-books.

If he had been a physician, he would have had no other motto than that of your venerable society, you may be sure, *naturæ duce*; clear in everything, he would have had much wit to steer in the golden mean between confidence in the administered or applied remedy and the appeal to the faith and hope of the patient, which I take to be important factors of the *vis medicatrix naturæ*. He would have appreciated the truth that there is nothing either good or bad, but thinking makes it so, and the converse truth, that one cannot hold a fire in his hand by thinking on the frosty Caucasus. In short, he would have divined and used what merits soever there might be in the scheme of mind-cure, faith-cure, and Christian Science.

Finally, in his views of this and the two other great professions, Shakespeare was, as we should expect, exactly what the unthinking crowd is not. That crowd alternately sneers, lampoons, and burlesques the preacher, the physician, the lawyer, and in time of sore need clings to them with superstitious desperation. But Shakespeare understood what these professions dealt with—the *Imponderables*—which have ever weighed, and ever will weigh, heaviest for the welfare of man; one with the soul's relations to God and immortality; one with law whose seat is in the bosom of God; this great one with that wondrous vital force which is a part of the breath of the Almighty's nostrils. Shakespeare never joins the ranks of the sneerers at these. He has a few sharp words for pretenders and hypocrites in church, law, and medicine, but for the honest professional, ever full, deep, strong reverence.

The sketches of the physician in "Cymbeline," "Macbeth," and Lear, are short, but noble. But that play of Shakespeare's, which, of all the thirty-seven, stands first for the physician is "All's well that ends well" (a happy coincidence in the name); and *adsit omen!* for the profession. Here Shakespeare has one of the poet's prophetic glimpses, and foresees the female physician in Helena, through whose hand comes the remedy, derived from her great deceased father, which cures the King of France from his chronic disease. And in Helena, at once almost the gentlest, the bravest, and the most persistent of Shakespeare's women, we have the very type of women to succeed. It is Helena's father, the deceased physician, Gerard de Narbon, in whom Shakespeare indicates the very ideal practitioner. Shakespeare (we should have known he would see what not one in ten thousand of the laity see) tells us here what is the essence of quackery in medicine—not as the vulgar laity suppose, ignorance (for which of the wisest of you will not admit that his ignorance is boundless?)—that not ignorance makes the quack but dishonesty.

Gentlemen, let me conclude with the wish that every man and woman of the Massachusetts Medical Society may be worthy of the praise (it would make the best of epitaphs) which Shakespeare bestows upon the great physician, Dr. Gerard de Narbon, "His skill was almost as great as his honesty. Had it stretched so far, it would have made nature immortal."—D. M'P.

REVIEWS.

Notes on Typhoid Fever: Tropical Life and its Sequelæ. By JEFFREY A. MARSTON, M.D., C.B., Surgeon-General Medical Staff (retired). London: H. K. Lewis & Co. 1890.

OF late years every writer on the subject of enteric fever, when proceeding to discuss the question of its etiology, found his argument to lie almost naturally along the lines of specific infection, and where an antecedent case could not be found, it was by hypothesis assumed to exist. Budd's writings had prepared the way for a ready acceptance of the bacillus of Eberth as the connecting link between one case and another, and in this country, at all events, the theory and the accumulated experience of successive epidemics seemed to square with each other so tolerably well that we had almost got comfortably settled down to the conviction that propagation by continuous succession was a fact against which nothing serious was likely to be alleged. Some considerations, it is true, based on a morphological variation of the implicated bacilli, seemed to point to a need for widening the theory, but these have scarcely yet been raised to the level of an argument. Another and widely interesting aspect of the question is now presented by Dr. Marston, and one leaves his book with the impression that the last word has not been said on the matter.

Dr. Marston's evidence is largely drawn from experience acquired while serving with the army in India and elsewhere, and his argument naturally opens with a reference to the wide geographical distribution of the disease. But while its cosmopolitan character warrants the statement that enteric fever has "no geography," this must be held as qualified by the notable racial immunities which are known to exist. "The Eastern and Southern races, the Asiatic, African, and mixed races, and the inhabitants of warm climates generally, enjoy a relative immunity from attacks of typhoid fever—an immunity which is almost absolute as compared with white peoples, the inhabitants of cold and temperate climates." In particular, the notable susceptibility to the disease displayed by young soldiers in India, brings under consideration the altered and frequently exalted physiological states, which may be regarded as the prelude to that full and complete adaptation of the native of a temperate clime to his newly acquired tropical surroundings, and which we try to define by the

term "acclimatisation." In this process Peyer's and the solitary glands of the intestine play an active part. Their increased functional activity, however, may outstep a healthy limit and become morbid, and thereupon may ensue a series of symptoms which clinically are not to be distinguished from those of enteric fever, while the resulting changes in the structure of the glands themselves are such as confirm the impression produced by the symptoms.

The hypothesis is advanced with admirable moderation. It is not intended that it should displace any other theory, but rather that the scope of investigation into all outbreaks should be widened.

"There is abundant evidence to show that many outbreaks of typhoid fever in India are capable of the same explanation as in England." But water contamination, and with it that of milk, will not account for all the outbreaks; nor will the use of bazaar liquors, for these, among other reasons:—India, excepting a few cities, has no system of sewers; surface contamination of wells may be granted, but the greatest prevalence of enteric fever coincides both with the lowest and with the highest level of the well water; women and children suffer less from typhoid than do the soldiers, and officers, who do not usually consume the bazaar liquors, suffer from typhoid about equally with the men.

As has been said, Dr. Marston writes from the vantage ground of an experience of the disease gained in many climates, and his discussion of its etiology is of more than passing interest.

Throughout the other chapters dealing with enteric fever, Dr. Marston has happily carried out an idea which he expresses in the introduction, viz., that of supplying "dropped stitches in the pathological pattern" of the disease. And as nowhere else is it probably so truly the case as in enteric fever, that these dropped stitches or varieties are more common than the type, this work forms a very valuable addition to all that has been already written on the subject. Particularly is this the case in the discrimination of symptoms due to enteric fever in patients who are also affected with malarial disease, and in that other class of cases found on the Mediterranean seaboard with no significant feature but a continued pyrexia to indicate a departure from health.

But, as of special interest to those who only see the disease in this country, a few points may be selected for further reference. Regarding incubation, an endeavour is made to classify the duration thereof by the assumed source of the

contagion, and when water contamination was the apparent cause, from 5 to 14 days usually elapsed before the beginning of symptoms. But the records of the Egyptian campaign of 1885 supply apparent grounds for regarding as possible a delay in the onset of the disease of nearly three months from the date of exposure. When the period extends beyond that, it is well observed that it is necessary to have recourse to a subsequent fresh infection by way of explanation. One case is recorded of death following an undoubted second attack occurring two years after the first, where *post-mortem* examination revealed recent and cicatrised ulcers.

In dealing with the eruption of enteric fever, an interesting suggestion is made which would regard its appearance in crops as depending on a progressive implication of the intestinal glands. Many will be able to recall cases where similar spots accompanied undoubted tubercular lesions of the same glands, and accept Dr. Marston's theory of auto-infection, tentatively at least.

Special notice is demanded of the chapter on the treatment of enteric fever. Throughout it is excellent.

The remaining chapters in the book on Tropical Life and its Sequelæ have already appeared in the columns of the *Lancet*. They are written in an interesting manner by one who has much to tell, and who tells it well.

A Text-Book of Chemical Physiology and Pathology. By W. D. HALLIBURTON, M.D., B.Sc. With 104 Illustrations. London: Longmans, Green & Co. 1891.

WE welcome this volume as one the utility of which will not be confined to one department of medical science, but will extend to several. The book will be referred to by Physiologists and Pathologists, and will be of great assistance to those general practitioners who desire to have accurate information at hand as to the chemistry of the various processes both in health and disease.

It is an evidence of the growing recognition of pathology as an important link between the more purely scientific and the more directly practical departments of medical study, that we have it here intimately associated with physiology in a treatise on the chemistry of the living body. This intimate association with physiology was perhaps the greatest service rendered by Cohnheim, whose work on General Pathology is really one on pathological physiology. In the present work

we have the physiological and the pathological brought into the closest relation on the basis of the chemical constitution of the tissues, of their secretions, and of the fluids generally.

If we indicate briefly the contents of the work, our readers will be able to form some judgment as to what they have to look for.

Part I is devoted to the Methods of Research and Analysis, and it gives a brief description of the principal apparatus and methods to be used in the prosecution of physiological chemistry. This is followed in Part II by a detailed description of the Chemical Constituents of the Organism. One of the most interesting chapters in this section is that dealing with the Proteids, in which the various forms of albumen are described. At the end of the chapter there is a brief note on Proteids as poisons, which we would have gladly seen expanded. The chapter on Albuminoids, Ferments, and Pigments is also rather defective, and we note that, under the extraordinarily mixed designation "*Lardacein*," there is an exceedingly brief paragraph on the amyloid or lardaceous substance which plays such an important part in pathological processes. There is no attempt to deal with the physiological chemistry of this process in any part of the book, and even his mention of the cases in which it occurs is incorrect. We seriously question its frequent occurrence in cases of chronic pus formation apart from tuberculosis and syphilis, and we know that it is not infrequent in cases of syphilis without pus formation. There is in this section also a chapter on *Ptomaines* and *Leucomaines*, which is a model of condensed but accurate information, put in a clear and practical form. It deals not only with the chemical constitution of those substances, but gives the method of separation, as well as an enumeration of those which have been individually distinguished.

In Part III we have the Tissues and Organs of the Body. It contains a large amount of valuable material, but there are not a few subjects omitted or briefly considered which we should have liked to see more fully discussed. It is curious, for instance, that in the chapter on The Blood in Disease, although the author devotes considerable space to Charcot's crystals, he gives the briefest possible reference to lipæmia, although in a note he states that he has had a case under his own observation. Then, again, in the chapter on The Connective Tissues in Disease, there are long descriptions of the pigments of melanotic sarcomata, and on myxedema, while such important subjects as mucous and hyaline changes, and

even calcareous infiltration, so common in the diseased valvular structures of the heart, and in the walls of blood-vessels, are not even mentioned. The amount of space devoted to myxœdema might well have been spared, as the Report to the Clinical Society, from which the account is confessedly taken, is easily accessible.

Part IV deals with Alimentation, and takes up the subjects of Food, Diet, Saliva, Gastric Juice, &c. There is a long and interesting chapter on the Bile.

The next section is on Excretion, and is almost entirely devoted to the Urine, there being only a short chapter at the end of the section on the Secretions of the Skin and allied Structures. The first chapter of the section has an admirable description in few words of the structure and function of the Kidney. Altogether, this section is one of the most complete and satisfactory in the book.

The last section is devoted to General Metabolism. The author adopts as an equivalent for the German term "*Stoffwechsel*," the expression Exchange of Material, suggested by Burdon Sanderson. In this section there is a chapter on Animal Heat.

In laying down the work we have to acknowledge to the full its many great merits. Its demerits consist in a certain want of proportion. In our opinion a text-book, especially when it is virtually the only one on the subject, should show no partiality for special subjects. It is difficult for an author who has devoted himself to special topics to avoid this error, and it is therefore scarcely to be blamed, especially in a first edition. We trust that a second edition will soon be required, and that the author will make the book even more useful than it is.

A Handbook of the Diseases of the Eye and their Treatment.
By HENRY R. SWANZY, A.M., M.B., Surgeon to the National Eye and Ear Infirmary, Dublin. London: H. K. Lewis. 1890.

THIS is the third edition of Mr. Swanzy's well-known text-book. It seems but yesterday that we were writing a notice of the second edition, which speaks volumes for the popularity of the book. That Mr. Swanzy is himself of the very highest standing is, perhaps, best proved by his having been elected Bowman lecturer by the Ophthalmological Society of the United Kingdom.

It is not our purpose to mention all the points which might

call for remark, but only those which seem to be of greater moment in the present state of ophthalmic science.

And, first, let us again say that, notwithstanding the many excellences of the book, the chapter on the Refraction of the Eye is, in our opinion, exceedingly meagre. The whole knowledge of physical optics which the reader is supposed to require is discussed in something like seven pages, for the most part occupied with diagrams. To our mind, a student will never make satisfactory progress with his ophthalmic studies till he has thoroughly mastered the relationships of conjugate foci. We do not say that this is all he has to learn, very far from it; but it is certainly the necessary beginning of ophthalmic wisdom, and, we think, ought to have received a longer and clearer exposition from the author.

The sections dealing with the examination of the refraction of the eye are good, but we could have wished that Mr. Swanzy had at least mentioned Bjerrum's types for measuring the light and form senses.

The parts dealing with the diseases of the various tissues and structures of the eye are much the same as in the last edition, and are in the main exceedingly good. We are rather surprised, however, to find Mr. Swanzy recommending dark spectacles for the treatment of catarrhal ophthalmia. While such glasses are no doubt of some use in the treatment of certain diseases of the choroid and retina, we doubt their use in diseases of the conjunctiva. It seems to us that they rather tend to set up or to maintain a retinal asthenopia, a complication by no means to be desired.

Under the common heading of Diseases of the Uveal Tract are classed, and we think very rightly, Diseases of the Iris, Ciliary Body, and Choroid, along with Sympathetic Ophthalmitis. We think the author might have been more cautious in advising atropine in acute iritis. For while we would use it in every case, still we would do so very sparingly, so long as the disease is at all acute. It may at that stage prevent fresh adhesions being formed at such parts of the iris as can still be dilated. It cannot, so long as the iris is in this condition, break up existing adhesions, but it may act as a very powerful irritant.

Sympathetic Ophthalmitis receives a very clear description. The question of enucleation is one of the most difficult in the whole range of ophthalmology, at least in certain cases. The rules laid down at page 259 seem to be very useful guides in this matter. As to the nature of the disease, he says:—

"Investigations made in recent years have placed it beyond doubt, that sympathetic ophthalmitis is an inflammation, propagated to the sympathising eye by direct continuity through the optic nerves and chiasma from the exciting eye, as erysipelas extends over the skin, and that the micro-organism known as *staphylococcus pyogenes albus* or *aureus* is the active element in the process."

There is a carefully written chapter on the Motions of the Pupil in Health and Disease, and in another section there is considerable attention given to such eye symptoms as help in the localisation of cerebral mischief.

In our opinion, this book is in many respects the best of the smaller text-books in our language and one which students will find a trustworthy guide.

A Treatise on the Diseases of the Sheep: Being a Manual of Ovine Pathology. By JOHN HENRY STEEL, F.R.C.V.S., &c. London: Longmans, Green & Co. 1890.

A REVIEW of a book on the diseases of the sheep may seem a little out of place in a medical journal, but there are many reasons for bringing such a work before the notice of the profession. Morbid processes are essentially the same whatever the species of animal, and it has happened not infrequently that valuable facts concerning diseases of mankind have been brought to light by study of the same diseases in the lower animals. We might refer, in connection with ovine diseases, to the beneficial results which have followed upon the information acquired concerning the disease anthrax and the diffusion of entozoa. It is evident from perusal of this treatise that a vast amount of work remains to be done in ovine pathology, and especially in relation to the diseases "Foot-rot," "Louping Ill," and "Braxy." Hundreds and thousands of sheep die annually of diseases, the causes of which are as much shrouded in mystery as anthrax was 30 years ago, and there is very little evidence to show that veterinarians are bestirring themselves to take advantage of modern discoveries in pathology towards investigating these diseases scientifically. Is this state of affairs to be placed to the discredit of veterinarians as scientists, or to the influence of the Anti-vivisection Act?

We congratulate the author of this treatise most heartily

on the manner in which he has accomplished a rather difficult task. He has systematised for the veterinary student the whole subject of ovine disease, and the many conflicting views in regard to pathology and treatment are very fully and fairly discussed. The work, we are confident, will also be welcomed by farmers, and should serve to diffuse much information regarding an animal upon the health of which so much material prosperity depends.

In regard specially to the text, there are two points only to which we seek to raise objection. The chapter on "The Blood" is made to comprehend the specific disorders, as well as the diseases proper, of the blood. This will only tend to produce an erroneous conception of the nature of the specific diseases. It is certainly not in accord with modern views; moreover, it serves in a manner to show how veterinary science lags behind the time, and has not fully availed itself of the discoveries of the last two decades. We cannot reconcile ourselves either to the "foot" being included among the organs of special sense.

Koch's Remedy in Relation Specially to Throat Consumption.

By LENNOX BROWNE, F.R.C.S. Ed. Illustrated by Thirty-one Cases and by Fifty Original Engravings and Diagrams. London: Baillière, Tindall & Cox. 1891.

THE rush of medical men and of patients of all nationalities to Berlin in December, 1890, will always rank as one of the most wonderful, and in some respects most ludicrous, events in medical history. The excitement among tubercular patients was not so wonderful, and probably illustrations of similar pilgrimages could easily be found, both in general and in medical history; but that the medical profession, commonly regarded as one of the least easily moved of all human avocations, should have joined in the rush, and should have been excited to a fever-point, is altogether unprecedented and almost incredible. The explanation of this medical excitement is not easy to find. Some have sought for it in ignoble motives—such as the desire for notoriety, advertisement, and the like; but, while many motives were no doubt at work in bringing about the extraordinary state of matters existing in Berlin in the end of 1890, calm and dispassionate reflection on the whole circumstances inevitably leads to the conclusion that the ultimate causal factors of the whole commotion were

not ignoble or sordid, but had their origin in an intense desire for the relief of suffering humanity, and in an almost universal faith in the unwavering honesty and splendid scientific work of one man—Robert Koch. In no sense could it be said that the excitement was due to any exaggerated statements by Koch himself as to the curative powers of his remedy. His statements were of the most guarded kind, and the great expectations aroused were the product of the credulity of the multitude anxious and ready, in an age of great scientific advancement, to believe that at length a remedy had been found for one of the gravest of all diseases. The excitement has now calmed down, and the stage of critical reflection has commenced. The great expectations of the many have not been fulfilled, and we are still without any royal road to the certain cure of tuberculosis. What no doubt helped to make the excitement, while it lasted, all the more intense, was the marvellous power which the fluid possesses over tubercular processes. But when it was seen that this power was not followed by the rapid cure so devoutly hoped for by all, disappointment naturally took the place of hope. But while this is so, the fact that a great discovery has been made cannot be set aside. It is too soon to judge of the real value of tuberculin as a curative agent, notwithstanding all that has already been done and written. The official report recently issued in Berlin, and analysed in our weekly journals, contains very conflicting results; and, the most that can with certainty be accepted, is that great improvement has resulted in certain forms of tubercular disease, whilst in many, particularly in phthisis pulmonalis, no great change has been effected. But even if tuberculin fails entirely to fulfil the great expectations it once aroused, it may be the means of leading to the discovery of more effectual means of combating this dread disease.

The volume which has formed the text for these remarks is the work of a clever specialist, anxious evidently to be early in the field, and requiring no detailed criticism or observation in this place, as it contains nothing that is not already well enough known to every intelligent member of the profession, who has carefully followed the weekly medical press. In view of the official report published in Berlin, the book is already old, and it contains a good many more of Gerhard's and Krause's cases than of the author's. We cannot help thinking that Mr. Lennox Browne's book has been brought out in too great a hurry.

The Elements of Ophthalmoscopic Diagnosis. By GEORGE A. BERRY, M.D., Ophthalmic Surgeon to the Edinburgh Royal Infirmary. Edinburgh: Young J. Pentland. 1891.

THIS is a small text-book of some eighty pages, which will, we think, supply a felt want. It aims at giving a concise and clear description of the diseased conditions to be found in the fundus oculi by ophthalmoscopic examination. It is essentially a clinical book, and we expect that it will come to supply for ophthalmoscopy the place held by such books as Finlayson's *Manual for general medicine*. There is no attempt at anything more than a description and an interpretation of the phenomena to be observed with the ophthalmoscope.

Few, if any, in the profession have a better knowledge of the literature of ophthalmology than Dr. Berry, and the preparation of such a book could not have fallen into better hands.

In one respect, however, we think a future edition might be improved. Although there is a very good and ample table of contents, still there is no index. Probably the author thought that it was not required when the table of contents was large and the book itself small. Yet we cannot help thinking that it would have been an improvement.

Anyone who is beginning ophthalmoscopy will find this book of the greatest possible assistance, and it is one which we can recommend.

Technic of Ling's System of Manual Treatment, as applicable to Surgery and Medicine. By ARVID KELLGREN, M.D. (Edin). Edinburgh and London: Young J. Pentland. 1890.

THIS is a work mainly for the specialist, but it may also be of use to the general practitioner when he has occasion to prescribe a course of treatment for the trained masseur to carry into effect. The author has evidently had much experience of Ling's system in the Royal Central Institute, Stockholm, and with his brother, Mr. Henrik Kellgren there.

The book is divided into two parts—(1) *Passive Movements*, where the ordinary methods of massage are detailed—viz., *Effleurage*, *Pétrissage*, *Tapotement*, and *Friction*; but, in addition, a few interesting chapters are added on *Shakings*, *Vibrations*, and *Nerve Vibrations*, which form of treatment the author claims to have been introduced by his brother, a

pupil under Ling, junior—(2) Active Movements, with or without resistance.

About fifty pages are devoted to a record of cases showing the result of treatment.

The work is beautifully illustrated, and the text is clear and distinct. Any practitioner who is devoting his time specially to massage will find the book of great service.

Pocket Medical Lexicon. By JOHN M. KEATING, M.D., and HENRY HAMILTON. With Addenda. London: H. K. Lewis. 1891.

If anyone wants a handy book which will give the briefest possible definition of the technical terms of our art, he will find it here. The words to be defined are printed in thick letters, and the meaning is often in one line, seldom more than two lines, and very rarely more than three, and this in a very small page. The definitions are on the whole as correct as it is possible to make them within such narrow limits.

The Lexicon proper is preceded by a list of abbreviations used in writing prescriptions, and by a table of roots and affixes which are common in medical terminology. At the end there is a list of Poisons and their Antidotes, comparative tables of metric and apothecaries weights, and a comparative thermometric scale giving Centigrade, Fahrenheit, and Réaumur, in parallel columns.

Antiseptics in Obstetric Nursing. By JOHN SHAW, M.D. Lond., Member of the Royal College of Physicians, London: Obstetric Physician, late Senior Assistant Physician and Pathologist to the North-West London Hospital. London: H. K. Lewis. 1890.

THIS is a small volume of lectures to nurses on the principles of antiseptics and their application to gynæcology and obstetrics. These lectures are interesting as an indication of the antiseptic methods which distinguish recent midwifery practice. Several antiseptics are favourably mentioned, and directions are given for their use, not only at the lying-in period and in operations, but in the preparation for nursing and in the care of the child. There is no attempt at any

exhaustive discussion of the subject, and we suspect that the value of such a course of lectures lies more in the practical demonstrations accompanying it than in the theoretical matter contained in the lectures themselves.

Illustrated Lectures on Nursing and Hygiene. By R. LAWTON ROBERTS, M.D. London: H. K. Lewis. 1890.

THERE is nothing very distinctive in this little volume when we compare it with the best of the recent works on the subject. But then we consider it should be placed among the few best works of its class, and that, after all, is a distinction. Though in the main a compilation, it appears to us to strike the happy medium of a sufficient reference to the many important details of nursing, without wandering in the domains of general medicine, as has recently been too much the case. The book is fully and judiciously illustrated, and is issued from the press in a manner which does credit to its publisher.

The Action of Water on Lead. By JOHN HENRY GARRETT, M.D. London: H. K. Lewis. 1891.

THIS little book of 116 pages embodies the results of a large number of experiments instituted with the object of ascertaining the cause and the mode of the action of water on lead, and of discovering a method for its prevention.

The experiments are described in detail, but the author adds little to what is already known on the subject. The only novelty is his suggestion that the action of the water "depends upon the presence of nitrate, nitrite, or an oxide of nitrogen in some other combination than as nitrate or nitrite, which is repeatedly reduced by the lead, and re-oxidised by the oxygen of the air, thus acting as an oxygen carrier between the air and the lead." This view differs from that of other investigators, and requires experimental confirmation. The means of preventing the action of waters on lead have been the subject of exhaustive researches, and are well known, and it is probable that reference to the more recent literature of the subject would have induced the author to curtail the dimensions of his essay very considerably.

Die Geschichte der Tuberkulose. Von DR. MED. AUGUST PREDÖHL. Hamburg and Leipzig: Leopold Voss. 1888.

(*The History of Tuberculosis.* By DR. AUGUST PREDÖHL.)

THIS is a work which deserves to be well known in England, and we regret that we have not found an earlier opportunity of bringing it before our readers. The book is one that could scarcely have appeared anywhere else than in Germany, and, as a work of reference on the subject of tubercle from the time of Stark and Reid to the date of its publication, it is invaluable. A carefully arranged table of contents, and full alphabetical indices of authors and matter, greatly add to the ease with which the volume may be consulted on any point.

The volume is divided into four sections, which deal with the following subjects: (1) the period up till that of Villemin; (2) the period of experiment beginning with Villemin; (3) tuberculosis as a parasitic infectious disease. Any of our readers interested in the study of tuberculosis should certainly consult this book.

Lehrbuch der Auscultation und Percussion, mit besonderer Berücksichtigung der Besichtigung, Betastung und Messung der Brust und des Unterleibes zu diagnostischen Zwecken. Von DR. C. GERHARDT, Professor der Medizin in Berlin. Fünfte, vermehrte und verbesserte Auflage. Tübingen, 1890. Verlag der H. Laupp'schen Buchhandlung.

(*Text-Book of Auscultation and Percussion, with Special Reference to Inspection, Palpation, and Mensuration of the Thorax and Abdomen for Diagnostic Purposes.* By DR. C. GERHARDT, Professor of Medicine in Berlin.)

WE have much pleasure in directing the attention of our readers to the issue of the fifth edition of Professor Gerhardt's work on physical diagnosis, a circumstance which shows it has been well appreciated in Germany. It may be confidently recommended as a most reliable work on all points connected with the methods of physical examination. The book is practical throughout, and well up to date. It is in every sense a thoroughly clinical manual, as one would expect from the pen of an author of such extensive and long experience as Gerhardt. English readers, who can peruse German with some facility, will find it a most useful and interesting volume. The woodcuts, though not numerous, are most instructive.

MEETINGS OF SOCIETIES.

MEDICO-CHIRURGICAL SOCIETY OF GLASGOW.

SESSION 1890-91.

MEETING X.—30TH JANUARY, 1891.

*The President, DR. MACEWEN, in the Chair.*I.—NOTES OF A CASE OF TREPHINING OF THE SPINE, WITH
DISLOCATION OF DORSAL VERTEBRÆ.

BY MR. D. N. KNOX.

Mr. Knox showed a patient who had been operated upon for fracture, dislocation of the spine, with complete paraplegia, and gave the history of the case. (See p. 249.)

The President urged the advisability of early operation in cases in which there was evidence of the symptoms being due to fracture with displacement, and expressed the opinion that, where there was a distinct "reaction of degeneration, very little good would result from an operation."

II.—NOTES OF A CASE OF NEPHRECTOMY FOR PYONEPHROSIS.

BY MR. D. N. KNOX.

Mr. Knox showed a kidney removed for cystic disease and pyonephrosis, and read notes of the case. (See p. 252.)

Dr. Milroy said that he had made a microscopic examination of this kidney, and found it interesting, as it exhibited a double form of degeneration—viz., cystic, and a degeneration into pus by means of miliary abscesses. He believed the cystic degeneration to be congenital, but the beginning of further degeneration into abscess, quite recent, perhaps as recent as July last. About that time the cysts evidently began to take on an excessive vigour of growth, pushing everything before them, and producing inflammation and abscess. This was proved by the rapid enlargement and bulging of the organ in the left groin. He believed that the right kidney was also cystic, but it had not yet shown any marked symptoms of further degeneration. He maintained that the abscesses were produced by the pressure of the cysts on surrounding kidney tissue, and could be well seen in the cortical part where the cysts were most numerous. He could

not explain why the cysts in this kidney had taken on such rapid growth, when as yet, in the other kidney, they were apparently quiescent. The after results justified the removal of this doubly degenerated kidney, as the lady was now in better health, and making more urine than before the operation. He was also of opinion that the cysts in this kidney, as in others of a similar kind, originated in the connective tissue of the kidney during intra-uterine life, possibly in the lymph spaces; that they afterwards only increased in size, not in number; and that it was simply by their size that they became injurious.

Dr. Middleton was of the opinion expressed by *Mr. Knox* and others, that the kidney not removed was probably also in a state of cystic degeneration. Though no attempt had been made to determine this point before the operation, by examining the urine from either kidney separately, it appeared to him that the condition of the urine passed since the operation pointed to the remaining organ being diseased also. If that were so, the result of the operation was extremely interesting, as showing how a diseased kidney might carry on the urinary secretion in a fairly satisfactory manner, and it might lead to a change in the views of surgeons as to the operative treatment to be adopted when cystic disease of the kidney was suspected. The after-history of the case would be looked forward to with great interest.

III.—CASE OF GASTRO-ENTEROSTOMY.

BY DR. J. CRAWFORD RENTON.

Dr. J. Crawford Renton read notes of a case of gastro-enterostomy with use of Senn's decalcified bone plates and showed the patient.

Mr. Knox congratulated *Dr. Renton* on the success of the operation. The patient did not seem now to be the subject of malignant disease, she looked so well and stout. If this should prove to be the case, it would only make the operation still more a success.

Dr. Middleton congratulated *Dr. Renton* on the success of the operation, and believed that it proved the importance of early interference in such cases. Further, it illustrated the value of early feeding by the stomach. He had seen fatal cases of this operation in which the patients sank apparently from defective nutrition. It had always to be remembered that cases of this kind had often been for a considerable period prior to the operation fed by the rectum, and that the rectum by and

bye came to resent this duty, so that one could not trust to maintaining the strength in that way. Dr. Renton had had great difficulty in determining the nature of the tumour, even though he had had the opportunity of feeling it carefully. Dr. Middleton could readily understand that, for he had himself on one occasion, at a *post-mortem* examination, been unable to determine that a large pyloric tumour was not cancerous, until the stomach and the tumour were laid freely open, when the mass was found to be inflammatory, arising from an ulcer near the pylorus, which had eaten into a large artery found gaping, hæmorrhage from which had caused death.

Judging from the result, and from the appearance of the patient, he would be inclined to suppose that in this case the tumour was probably of an inflammatory character. With regard, however, to the disappearance of the tumour it was worth reminding the members that a freely movable pyloric tumour was liable to shift its position and disappear, generally up under the liver. After such an operation as had been performed, which he believed might lead to the contents of the stomach passing in almost at once into the duodenum, contrary to what took place under normal circumstances, the stomach might even come to resemble the condition of the absolutely empty viscus, and therefore to occupy the position proved by Dr. Symington to be that of the empty organ—viz., with the pylorus in the left hypochondrium. It would be necessary, therefore, to carefully examine that situation, as well as the one previously occupied by the tumour. The future history of the patient would solve the diagnosis as to the nature of the tumour.

MEETING XI.—20TH FEBRUARY, 1891.

The President, DR. WILLIAM MACEWEN, in the Chair.

CASE OF TUMOUR OF THE BRAIN.

Dr. M'CALL ANDERSON described a case of tumour of the brain, diagnosed from the nerve symptoms.

The SECRETARY read, for Dr. GEO. BUCHANAN, an account of the operation for the removal of this tumour, and of the result.

Dr. R. M. BUCHANAN, in the absence of Dr. COATS, showed

the tumour, with microscopic sections, and described the structure.*

Dr. Alex. Robertson said that the symptoms present were typical of tumour of the brain. The convulsive movements, though valuable in their significance, were not equal to the partial paralysis of the other parts. He referred to a case recorded by him in the *Edinburgh Medical Journal* for 1869, in which, with the same lesion in the brain, spasmodic contractions began in one seizure in one part of the body, and in another part after a short interval. He also spoke of convulsions arising from the irritation of a tumour outside of the motor area. At the same time, the spasms in the case had been so uniform in their points of departure and progress, that their localising value was not much inferior to that of the paresis. The presence of the well marked optic neuritis was also of much importance. At the same time, the absence of this symptom by no means precluded the idea that a tumour might be present. A case was referred to in which, on careful and repeated examination, no morbid condition beyond a slight congestion was observed in the fundus of the eyes; and yet there was a tumour in the motor area, as was proved *post-mortem*. Vomiting had not been spoken of, and it was more frequently absent in morbid growths of the anterior and middle region of the cortex than at the back part or base of the brain. The observations of *Dr. Somerville* on the urines, together with his anticipation of the probable presence of a tumour, were exceedingly interesting. The corroboration of the diagnosis by percussion of the skull was also important. It was now many years since he (*Dr. Robertson*) had submitted to the Society cases showing the occasional value of this method of examination. In his opinion, however, it was only of use when the morbid condition was on the surface of the brain or in the membranes. Sometimes no pain was elicited on percussion, when a tumour or other morbid change was quite superficial. It might be that the recurrence of the fits to some extent after the operation was due to instability of nerve tissue having been established by the long presence of the growth. A similar effect sometimes resulted from excesses in alcohol. For a considerable period an alcoholic would have convulsions only after drinking to a considerable extent, but thereafter they might occur although abstaining from liquor; the instability of brain was permanent, apart from the original cause. But it was possible that the fits might be due to the presence of another tumour. Multiple tumours of the brain

* For full report, see *British Medical Journal*, 14th March, 1891.

were not uncommon; still they were usually single when of the kind removed by the operation. It was to be hoped that the instability of the cerebral substance would gradually subside.

GLASGOW PATHOLOGICAL AND CLINICAL SOCIETY.

SESSION 1890-91.

MEETING III.—8TH DECEMBER, 1890.

The President, DR. DAVID NEWMAN, in the Chair.

I.—ANENCEPHALY.

By DR. DONALD MACPHAIL.

Dr. Macphail showed an anencephalous foetus, which he considered to be of about six weeks' growth. (The specimen was handed over to Dr. Coats.)

II.—HARD OR BRAWNY ŒDEMA.

By DR. J. KERR LOVE.

Dr. Love showed a female patient, aged about 30, presenting this condition in the right leg and foot, whose right hand was amputated for a similar condition ten years previously by Dr. G. T. Beatson.

The case was referred to a committee, and a full account of it will appear with their report at an early date.

III.—MELANOTIC CANCER.

By DR. W. J. FLEMING.

Dr. Fleming showed a pedunculated melanotic tumour removed from the neck of a man aged 38.

History of the Case.—J. Y., æt. 38, was admitted to Ward XX of the Glasgow Royal Infirmary, on 13th Nov., 1890. On the left side of the neck at the level of the cricoid cartilage, internal to the sterno-mastoid muscle, was a reddish-black tumour about the size of a large walnut; at a little distance its appearance much resembled a knuckle of strangulated bowel. The surface of the tumour was glistening in most parts, but in some parts grey and sloughy in appearance.

It was pretty firmly connected with the deep cellular tissues, but not with any important vessel or organ. The tumour was painless.

A little lower down in the neck, slightly to the right side of the trachea, was an oval, firm, and painless swelling, the size of a small horse-bean. On stretching the skin over it, a bluish colouration can be made out.

The patient had been possessed of perfectly good health all his life, and there were no details of importance in his family history. He stated that a mole had always existed at the site of the tumour, which, eight months previous to his admission to the hospital, began to grow, and assumed a warty form. The top of the wart came off, he said, and then he observed the dark tumour slowly growing. During its growth it bled several times, but never to any great extent.

His general health was perfectly good. It was noted that there was a considerable deposit of pigment throughout the patient's skin, in the form of freckles, and here and there a small pigmentary mole.

The day after his admission I freely removed the tumour. The patient proved a very bad subject to anæsthetise, and in consequence the enlarged gland was removed a few days later under cocaine. When removed, it was found to be of a bluish-black colour, similar to the tumour. It lay apparently encapsuled in the subcutaneous cellular tissue, not adherent either to the skin or deeper structures.

Pathological Report by Dr. John Lindsay Steven.—"The tumour is found to consist of a connective tissue stroma, the interstices of which are filled with epithelial-like cells. Among these cells there is a deposit of brown pigment, which has apparently given the brown colour to the tumour. . . . The tumour is, from its microscopic appearance, a pigmented carcinoma."

Dr. Coutts agreed with the diagnosis of carcinoma on histological grounds.

Dr. Newman thought it might be described as an alveolar sarcoma.

IV.—FOREIGN BODY EMBEDDED IN THE FUNDUS OF THE EYE.

BY DR. T. S. MEIGHAN.

Dr. T. S. Meighan showed a patient with the following history:—

W. W., a joiner, aged 25 years, was admitted to the Glasgow Eye Infirmary on 24th November, 1890. He was wounded in

the right eye in June last by a small chip of steel which flew off the head of a hammer which he was striking with a second hammer to drive a wedge of wood. The eyeball was penetrated by the fragment at the outer side of the sclero-corneal junction, and blood was seen in the vitreous and anterior chamber on the day of the injury. No attempt at extraction of the foreign body, beyond feeling the wound with a probe, was made. Immediately after the injury, and for some hours, the vision was reduced to a doubtful perception of light, but the sight has gradually improved, and now he can see No. 16 Jäger test types. The examination of the field of vision shows that he barely sees the upper half of the field.

The point of penetration is visible externally, and is indicated by a small cicatrix at the outside of the sclero-corneal junction.

By oblique illumination, no mark of penetration can be seen within the eye, but whitish flakes are seen floating in the vitreous.

By the ophthalmoscope, large whitish flakes are seen floating about in the vitreous. The refraction is emmetropic, disc congested, and vessels tortuous; about three discs' lengths below the optic disc, a dark body, somewhat shining at one side, is seen. This dark body is partly surrounded by small yellowish masses, similar to the pieces floating in the eye, and evidently inflammatory products.

To-day (8th December, 1890) well marked separation of the retina on each side of the foreign body is seen.

That the dark mass shown in the drawing is the foreign body covered with inflammatory products, there can, I think, be no doubt, taking the history and the appearance immediately after the injury into account, and the patient's positive statement that the fragment broken off was very small.

Similar cases have been recorded by Dr. Adams in the *Transactions of the Ophthalmological Society*, and also by H. Knapp in the *Archives of Ophthalmology* for 1882, and their experience in such cases should cause us to reflect whether we have not been somewhat hasty in advising enucleation, or interfering with the eye to extract the foreign body; and that probably cases of this kind should be watched and treated for some time before resorting to extreme measures.

V.—FOREIGN BODY IN LARYNX OF YOUNG CHILD—REMOVAL.

By DR. D. M. DEWAR.

Dr. D. M. Dewar read the notes of a case in which he

removed a safety pin, $1\frac{1}{2}$ inch long, from the larynx of a child, aged 10 months.

A full account of this case will appear elsewhere.

VI.—CARD SPECIMENS.

Dr. FLEMING showed the bones from a case in which excision of the knee had been done.

Mr. MAYLARD showed a bladder punctured by the fragments of a fractured pelvis.

MEETING IV.—12TH JANUARY, 1891.

The Vice-President, DR. SAMSON GEMMELL, in the Chair.

I.—SPONTANEOUS FRACTURE.

By DR. BEATSON.

Dr. Beatson showed, as a fresh specimen, a femur which had given way at its middle during sleep. The shaft was practically replaced by a cancerous growth, but there was little or no tumour perceptible through the soft parts. The growth was secondary to a primary cancer of the lung. The distal phalanx of one of the fingers was also replaced by a similar growth. The patient was aged 48.

Dr. Coats, who had examined the specimens, thought that the cancerous growth in the lung had originated, as is commonly the case, in the mucous glands of the bronchi.

II.—CANCER OF LIVER—NO ASCITES.

By DR. BEATSON.

Dr. Beatson also showed a liver weighing 11 lbs., the seat of various large cancerous nodules. Patient aged 65. Illness of about one year's duration, no ascites.

III.—COLLES' FRACTURE, WITH FRACTURE OF THE SCAPHOID.

By DR. RUTHERFURD.

Dr. Rutherford showed the bones from a case in which these injuries were combined. The patient was a man apparently under 30 years of age, who had fallen into the hold of a ship. The lower end of the radius was comminuted,

the fracture extending from immediately in front of the carpal articular surface upwards and backwards for about an inch and a quarter; the posterior shell of the bone to this extent

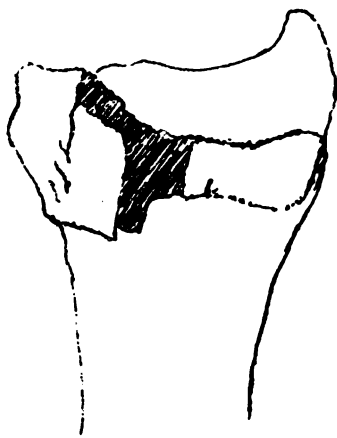


FIG. 1.
Posterior surface of radius.



FIG. 2.
Anterior surface showing line of fracture crossing above the base of styloid in front, immediately above attachment of anterior carpal ligament.

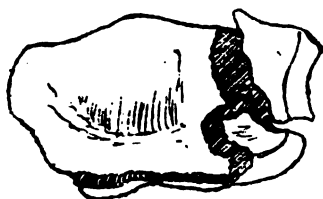


FIG. 3.
Carpal surface of radius.

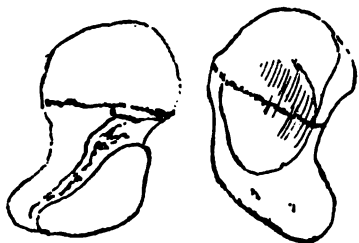


FIG. 4.
Dorsal and palmar views of scaphoid.

was much shattered, and the surface for the semilunar separated by an irregular fissure from that for the scaphoid. The tip of the styloid process of the ulna was detached. The scaphoid was broken sharply across, nearly at right angles to

its long axis, the fracture, with somewhat crushed margins, crossing its non-articular dorsal surface. There was a small slit-like wound over the styloid process of the ulna and rather below it.

Dr. Rutherford suggested that in this case, and possibly in others where the fracture was so low down, and attended by comminution, that the injury was to some extent the result of direct violence—that is to say, of violence transmitted more or less directly through the fully extended scaphoid to the opposing expanded lower end of the radius, the violence of the fall having been received higher up—that is to say, on the palmar surface of the carpal bones—and being probably great in degree, as compared with those other cases in which there was “transverse breaking strain” transmitted less directly by the leverage of the whole hand, when the fall is supported on its more distal parts, and results in a more or less transverse fracture further above the carpal articular surface.

Dr. Cameron thought that there was no reason here to speak of direct violence, that, as in other cases where it was produced by a fall from a height, the injury was to be explained as due to hyper-extension. He referred to cases in which Colles’ fracture was complicated by dislocation of one or more of the carpal bones, usually backwards, mentioning the scaphoid, semilunar, and os magnum.

Dr. George Buchanan also referred to cases in which he had seen dislocation backwards of carpal bones; he thought the bones concerned were the semilunar and cuneiform.

Dr. Workman asked whether Dr. Rutherford considered this a true Colles’, and referred to the views of Dr. Gordon, of Belfast, who would admit only one form, that namely consisting in the separation of the lower fragment from in front and below, upwards and backwards, and due to “cross breaking strain.”

Dr. Rutherford pointed out in reference to the last speaker’s inquiry, that the specimen would comply with the conditions mentioned, except for the fact that the lower fragment was comminuted. The exact seat and character of the fracture might vary with the length of the lever (distal to radio-carpal articulation) and the amount of the violence. It was to be remembered that the association of the name of Colles with fractures in this region depends not so much on his having precisely described a constant form of fracture as upon his having shown that the injuries which previously were commonly set down as sprains and dislocations really involved a fracture of the radius near its lower end. He agreed that the

injury was inflicted in the position of hyper-extension, but to account for the comminution of the lower fragment of the radius, as well as the transverse fracture of the scaphoid, he thought it necessary to suppose direct jamming of the scaphoid against the dorsal edge of the expanded lower end of the radius.

IV.—ATROPHY OF MUSCLES OF HAND.

BY DR. HAWTHORNE.

Dr. Hawthorne showed a patient with atrophy of muscles of palm, resulting from an incised wound at the level of the base of the hypothenar eminence, and which had divided apparently both median and ulnar nerves. The injury occurred in August, and the patient came under observation nearly three months later; there was never complete absence of sensibility after this date.

V.—ADDISON'S DISEASE.

Dr. HAWTHORNE read notes of a case of Addison's disease in a young girl, where death occurred very suddenly.

Dr. R. M. BUCHANAN demonstrated the suprarenal capsules and adjoining parts; also, microscopic preparations showing the distribution of the pigment.

This case will be the subject of a separate memoir.

VI.—UNUSUAL FORM OF ENCYSTED CALCULUS.

BY DR. CAMERON.

Dr. Cameron showed a calculus, mainly uratic, about the size of a bean, which during life, was covered with mucous membrane, was diagnosed as a tumour, and was removed by the suprapubic operation.

The patient, J. Y., æt. 24, was admitted into the Western Infirmary in October, 1890, suffering from pain in perineum and point of penis, chiefly at the end of micturition, and with more or less of hæmaturia, both of about a year's standing, subsequent to an attack of right-sided renal colic which was never repeated. Pain at the end of micturition was noted as being present, no matter what position he assumed. The pain was so bad about the beginning of 1890, that about this time he kept his bed for three months, with a certain amount of relief, the pain returning when he began to go about again.

In January, and again in April, he was sounded by another surgeon, and nothing was detected.

After admission to the Western Infirmary Dr. Cameron sounded him, again without result. Some days later, the patient was put under chloroform and the cystoscope introduced. There was then made out in the lower fundus a reddish mass, which Dr. Rutherford described as a polypoid mass situated near the orifice of the right ureter, and about the size apparently of the distal phalanx of the index finger. Dr. Cameron was by no means satisfied personally as to these details, but on the strength of the statement and the clinical indications proceeded, a few days later, to open the bladder above the pubis. There was then found a pedunculated mass in the situation described, covered by a velvety membrane and bleeding rather freely on manipulation. Dr. Cameron seized it with a pair of pile forceps to draw it up, intending to twist it off or put a ligature about its base. To his surprise, it came away very easily, and was found to consist of a stone with an envelope as described. Examination of the tissue covering the calculus showed it to consist of altered mucous membrane with glandular cavities lined by columnar epithelium. The membrane did not completely cover the stone—that is to say, there was an opening towards the apex of the mass. Microscopic sections of this tissue were shown.

Dr. Cameron was of opinion that this was a case of renal calculus becoming impacted at the lower extremity of the ureter, where it passes through the thickness of the bladder wall, and coming to project into the bladder either by causing prolapse of the ureteral mucous membrane, or by causing the whole thickness of the wall to project before it. The history of renal colic was of importance as giving support to this theory. The condition of matters found explained the futile results of sounding. The case was of interest as illustrating the value of the cystoscope, while at the same time it illustrated a fallacy in the results obtained by it, which in the nature of things must be of very rare occurrence.

Dr. Rutherford pointed out that such a condition of things had been described, though he had not been able to find accounts of individual cases. According to Le Dentu (*Affections Chirurg. des Reins et des Uretères*, p. 753), calculi are arrested at three points in their course from the kidney: (1) just after leaving the pelvis, (2) at the flexure of the ureter over brim of pelvis, and (3) in the thickness of the wall of the bladder. The last mentioned, according to some authorities—including among the older ones Collot, Le Dran, and Desault—form one variety of encysted stone, and Le Dentu continues (p. 739)—“C'est pourquoi on a pu admettre théoriquement

que les culculs logés dans la portion intravésicale de l'uretère pouvaient se frayer un chemin jusque dans la cavité de la vessie en pediculisant la muqueuse et en s'en formant comme une sorte de coque ou de membrane d'enveloppe."

Professor Buchanan was quite prepared to accept the theory, and recalled a case in which he had reason to believe that a stone remained impacted in the situation described for some days, subsequently becoming liberated into the bladder.

VII.—EPITHELIOMA OF TONGUE AND FLOOR OF MOUTH.

DR. GIBB showed a patient from whom a portion of the lower jaw was removed for epithelioma, also the mass removed and microscopic preparations.

VIII.—DUCT CARCINOMA OF THE MAMMA.

DR. PARRY showed as a card specimen the tumour with intracystic papillomatous growths and microscopic preparations.

GLASGOW OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.

SESSION 1890-91.

MEETING IV.—25TH FEBRUARY, 1891.

The Senior Vice-President, DR. HALKET, in the Chair.

DR. ROBERT JARDINE showed an Anencephalous Fœtus; and DR. M. CAMERON showed a Crutch.

ADDITIONAL TRACTION IN FORCEPS CASES AS AN ALTERNATIVE OF CRANIOTOMY.

Dr. W. L. REID read a communication from Dr. Duke of Dublin, on "Additional Traction in Forceps Cases as an alternative of Craniotomy," and opened a discussion on the subject.

Dr. Duke stated that the idea of attaching the forceps in some way to the body of the operator struck him several years ago, while assisting at a delivery, when he grasped the practitioner around the wrist to get additional power, and a living child was delivered. Without this additional power

they would have been forced to do craniotomy. He uses tractors which can be buttoned into the fenestra of any long forceps before application. The power is got by means of a belt from the tractors round the body. By throwing his weight alone on the belt he could get a power of 140 lbs. measuring with a manometer; while by using his arms also, he could put a further strain of 28 lbs. on. He gave several difficult cases in which he had found it of great use.

Dr. W. L. Reid in opening the discussion said:—About fifteen years ago, I tried additional traction by means of a belt round my waist, and a chain put through the finger-ring of Barnes' forceps. For some reason which I cannot now remember, I substituted a chain and cross-handle, which was given to a second individual. Part of the reason was, that I wished to allow the forceps to move on the chain as the former was guided by the head through the pelvic cavity. This idea I still think sound, viz., that the requisite force only should be applied, and the head allowed to find its own way through the canal of the pelvis. This I take to be part of the explanation of the occasional comparative ease with which delivery is effected by turning.

But, before speaking of the means by which additional force may be brought into play, it may be well to consider in what circumstances additional force is safe. It would not be so in a case in which the blades of the forceps were inefficiently applied to the head, or where traction was applied out of the axis of the pelvic inlet. In the one case, the instrument in slipping would do great injury, or the projecting blades do mischief to the maternal tissues; in the other, parts such as the base of the bladder, ill adapted to support pressure, would be severely injured, not by its continuance, but its amount.

Given, however, a suitable hold of the head, and, of course, a case in which the forceps is at all applicable, I am of opinion that an amount of force much greater than is usually believed proper may be employed with safety to the mother, and often to the salvation of the child.

In my own practice, and in difficult cases, I often employ the cross-handle and chain I now show you. The forceps have a curved part at the end of the handles, and round these the chain is thrown, and traction exercised by means of the handle. I watch the blades carefully myself, and the individual who supplies the force is warned to slacken the chain the moment the word is given, else there would be risk of the head being brought too suddenly down on the perineum if it passed suddenly through the narrowed brim.

This plan has answered well in my hands ; the chief difficulty being to know when to stop and take to craniotomy, or, in some cases, give version a despairing trial. This can only, I think, be attained by a somewhat extended personal experience of difficult labour, and by careful observation of the results of traction in the way of moulding the head and its tendency to advance through the point of stricture.

I am of opinion that Dr. Duke's method, by means of a belt and traction rod, is quite a good and proper one, and that it will often be useful in saving children who would otherwise perish.

Dr. M. Cameron was not very favourably inclined towards the method, as it prevented the operator being in exact touch with his patient, so that he could not keep himself informed as to the progress of the head. He showed a pair of Barnes' forceps, with traction rods applied at right angles to the end of the handles, so that the crossbar pulled in the axis of the brim. He usually got an assistant to apply the traction while he guided the handles, and carefully noted the progress.

Drs. Gray, Jardine, Turner, and Halket also spoke. They all questioned the utility of the invention, as it seemed too much like an application of brute force. The power of 168 lbs., it was thought, could be obtained by the ordinary traction rod forceps.

ABSTRACTS FROM CURRENT MEDICAL LITERATURE.

SURGERY.

By HENRY RUTHERFURD, M.B., AND DONALD MACPHAIL, M.D.

Histological Observations in Cases of Skin Grafting by Thiersch's Method.—Garre has made numerous microscopic examinations in cases of skin grafting, at periods varying from five hours after the operation to weeks and months, and even two years, and recorded his results in *Beitr. z. Klin. Chir.*, 1890.

In cases where a flap is simply twisted over upon a raw surface, its vitality being secured by a pedicle, healing takes place by primary union if there is no blood between the raw surfaces ; by first intention in other cases. The author describes the various stages of these processes fully.

The most interesting part of the paper, however, is that in which the author describes the processes by which union is effected in cases where a piece of skin has been completely separated from another body, or from a different part of the same body, and applied to the wound after an interval. There is at first a thin layer of blood between the raw surfaces, soon replaced by a

layer of exudation. About nine hours after the application of the flap, leucocytes from the exuded layer make their way into the connective tissue spaces on the under surface of the flap, and into the open orifices of the blood-vessels, filling these vessels nearly to their ultimate ramifications. Fibroblasts soon take the place of the leucocytes, and by the tenth day wander-cells are found, mostly in the blood-vessels. Many, nearly all, of the blood-vessels of the flap are functionally destroyed, but a small proportion of them resume their function, from the third day, by becoming connected with the vessels newly formed from below. By the tenth day, the transplanted skin is, to use Thiersch's expression, "impaled upon" new vessels sprouting from below.

The epithelium is for the first three days quite passive, or else merely shows traces of degenerative processes; but it is pushed off and replaced by new cells from the Malpighian layer, as soon as these have felt the regenerative influence of the new blood-vessels.

The practical teaching of these observations is twofold. They show that it is better to transplant true skin and epidermis than epidermis alone, and that the rapidity of union is in inverse ratio to the amount of blood between the raw surfaces. The author examined microscopically the skin from a flap which had healed after transplantation, but had subsequently ulcerated. Two pathological conditions were found. There was perivascular infiltration of round cells beneath the epithelial layer, and there were minute extravasations of blood among the fibres of the connective tissue in the situation of the primary layer of exudation, and at that situation also the blood-vessels coming from below showed evidence of stasis. Evidently the round-celled infiltration was inflammatory, and the exudation due to stasis. These conditions necessarily militate against the proper nutrition of the transplanted tissues, and probably explain the frequent failure of attempts to heal ulcers of the leg by transplantation.—(*Centralbl. f. Chir.*, 22nd March, 1890.)—D. M'P.

Accidents from Electric Currents.—Probably the two most important articles on this subject are one by Dr. Dana, in the *New York Medical Record*, 2nd November, 1889, and one by Dr. P. C. Knapp, of Boston, read to the Boston Society for Medical Improvement, and published in the *Boston Medical and Surgical Journal*, 17th April, 1890.

Dr. Knapp merely mentions the new diseases, telegrapher's cramp, the "telephone ear," and phono-electric ophthalmia, and the striking manner in which lunatics "have seized upon the wonderful powers of electricity to twist them into the fabric of delusions. Angels and devils rarely enter our asylums to-day, but instead the asylum walls are filled with wires which carry the thoughts of the paranoic to his persecutors, and their threats to him, and which bring mysterious electrical influence to torture and enfeeble him." Paying special attention to the surgical aspect of the question, Dr. Knapp gives very full reference to the literature of the subject of lightning stroke and fatal electric shock.

With regard to the pathology of the subject, he apparently endorses the opinion of Tatum (*New York Medical Journal*, 22nd February, 1890), that there is no lesion after death which can be ascribed to electricity. "The black, fluid blood, which is most constant, is due to the fact that the molecular life of the tissues persists after the cessation of circulation and respiration. He found, by experiments on dogs, that electricity did not impair the functions of muscles and nerves, that it caused no appreciable change in the blood, and that its fatal effect was due to arrest of the heart's action, the arrest being caused by the action on the heart itself, and not, probably, by the action on the medulla or the nerve supply."

After describing minutely a considerable number of cases of his own and others, Dr. Knapp summarises his paper as follows:—

"1. Currents of high potential may produce no permanent effect upon the human organism, or they may cause severe burns without other effects, or they may give rise to nervous symptoms of various kinds, similar to those seen after

other injuries, the so-called 'traumatic neuroses.' ("Electrical burns are apt to do rather badly, and the skin sloughs over a much larger region than appears burned at first.")

"2. Currents of high potential may prove fatal immediately, or they may give rise to burns which later cause death." ("Not, as a rule, from surgical shock.")

"3. The limit of safety from death or injury from currents of high potential has not yet been determined, and is probably variable."

"4. The alternating current is probably more dangerous than a continuous current of equal electro-motive force."

During the discussion which followed the reading of the paper, Professor Holman, of the Massachusetts Institute of Technology said, that from records and experiments we would probably be correct in taking something between 1,000 and 2,000 volts as being the inevitably fatal current, but that the exact determination of the strength was not of much practical importance, for it was absolutely necessary to use much stronger currents in the distribution of electricity.

Dr. Morton Prince said—"These cases are interesting from another point of view, and that is, as throwing light upon the pathology of traumatic psychoses. Dr. Knapp has shown that the symptom picture in these cases is that of ordinary traumatic psychoses, such as we get in railway injuries. Now, it has always seemed to me that a large number of these cases of railroad psychosis can be accounted for under the theory of psychical shock, and it seems to me that these cases bear it out.

"I should agree entirely with what Dr. Knapp says, that above the psychical shock there is in some cases a physical effect; this must be so, because in some cases we have death, and also from the fact that the alternating current is so much more deadly than the continuous current. If it was all psychical shock in all cases, I don't see why the psychical shock from the alternating current should be worse than from any other.

"Taking the cases where the effect is certainly not physical, I think they throw light on the other traumatic psychosis (cerebro-spinal concussion). It has been held that these latter cases are due really to actual physical vibration of the body. Here we have the same symptoms produced by the electrical current, under conditions in which there is absolutely no traumatic effect in the true sense of the word—no blow, no falling, no concussion; and if that is the case, it is fair to assume that the basis of the two are identical; and if there is no concussion in the one case, there probably is not in the other; and if psychical shock explains the electric cases, it will explain many of the railroad psychoses."—D. M'P.

Partial Extirpation of the Kidney. Dr. Kümmell, of Hamburg (*Centr. bl. f. Chir.*, 3rd May, 1890), shows that it is possible successfully to remove portions of diseased kidneys. This, he holds, may often be of great advantage, because the diseased portion of the organ is often comparatively small, and also because it not only renders operation upon a kidney possible, even when there may be disease of the other kidney present, but also renders operation upon both kidneys possible. He refers to physiological experiments by Tuffier, of Paris, which show how portions of kidney left *in situ* make good, by increased work, the loss of removed portions, just as one remaining kidney makes good the loss of an extirpated one.

The only case of partial extirpation previously recorded is one by Herczel, from Czerny's practice, in 1886, where a considerable portion of a kidney injured by accident was removed by scraping and incision, and where recovery followed.

Kümmell's first case, a woman of 41, was operated upon on 14th September, 1889. Through a lumbar incision a large abscess of the kidney was opened and emptied, and a large calculus removed from the cavity. Then, by scraping and clipping, diseased kidney tissue was removed till what was left was only about two-thirds the bulk of a normal kidney. The gap in the kidney was

partially closed by sutures passed through the external tissues, so as to secure the kidney in apposition with the external wound, and the whole cavity was stuffed with iodoform gauze. Recovery was perfect; no urine escaped by the wound, and in a very short time only normal urine was passed from the bladder.

In the second case, a patient aged 58, a large quantity of diseased tissue was removed from the convex border of the kidney. Bleeding was very free at the time, but was very easily stopped by plugging. Recovery was very rapid in this case also, without any tendency to the formation of urinary fistula, and with rapid disappearance of blood, pus, and albumen from the urine.—D. M'P.

Dislocation of Cervical Vertebrae without Fatal Results. By Dr. G. L. Walton, of Harvard University (*Boston Med. and Surg. Journ.*, 8th May, 1890).—"Since publishing in this *Journal*, in 1889, a record of five cases of dislocation of cervical vertebrae resulting in practical recovery, I have seen three other similar cases, an experience which would seem to indicate that such cases are not rare, the condition probably not infrequently escaping recognition through lack of familiarity with its distinguishing features. . . .

"There are probably many cases of unilateral dislocation with practical recovery which have never been recognised as such, on account of the lack of paralytic symptoms (the cord escaping pressure), and on account of the comparatively comfortable condition of the patient.

"Such cases present themselves, generally, with a history of a fall, possibly followed by temporary paralysis of the legs or arms, with or without retention of urine, but showing at present either no paralytic symptoms, or symptoms comparatively limited. Lack of mobility in the cervical region will be noted, however, when reduction has not taken place, the head in typical cases being held in a position resembling that of torticollis, resulting from spasm of the sterno-mastoid. Careful examination will show, however, that this muscle is comparatively lax on the side which would be affected to produce the deformity, while that on the other side is in a state of more or less pronounced tension, through being put upon the stretch; the same condition being noted in other cervical muscles. This is the first sign which draws attention to the spinal column, as the possible seat of injury. Further examination shows that the flexibility of the column is lessened, that passive motion is restricted in certain, if not in all directions, and that such efforts cause pain. More or less sensitiveness will probably be found near the region implicated, and perhaps a prominence of the transverse processes on one side.

"These points will lead to the correct diagnosis even if no irregularity in the spinal column is detected, either by external examination, or by the finger in the pharynx, such irregularity being much more difficult to detect in the cervical than in the dorsal or lumbar region, especially in the fleshy subject.

"On examining a case of suspected unilateral dislocation, the view from the back should not be neglected. Inspection from behind shows the head to be tilted, so that one ear is notably higher than the other, the head being also somewhat rotated, and in some cases set off, as a whole, to one side." The cases are fully described, with illustrations.—D. M'P.

Reduction of Posterior Dislocations of the Femur by Manipulation.—Catoir describes (*Thèse.*, 1888; Paris: G. Steinheil) a *méthode de douceur* for reduction of dislocations of the femur, of the iliac or ischiatic form, successful in all cases, even those where the Y-ligament is intact, and those not of quite recent origin, without violent traction, and even without chloroform. The method belongs to his teacher, Guermouprez.

The pelvis is fixed by the surgeon's hand grasping the anterior superior spine. His right hand grasps the patient's leg, flexes the knee, and then strongly flexes the thigh, till it touches the abdomen, which is often more easily done if the thigh is at the same time slightly adducted. Then by slight traction, with slight to and fro movements and slight rotatory movements, the displaced head of the femur can be pulled towards the acetabulum,

and finally easily pushed into place, either by the hands of an assistant or by the surgeon's knee. During the very last movement the forced flexion may be slightly relaxed.

In this method the risk of injuring neighbouring parts in old dislocations is *nil*, and skilled assistance is not needed.—(*Centralbl. f. Chir.*, 17th May, 1890.)—D. M'P.

The Condition of the Heart during Operations involving the Cavities of the Cranium, Thorax, and Abdomen.—Iginio Tansini has published a pamphlet (Modena, 1890) giving numerous pulse and heart tracings, taken during operations upon animals, to show the condition of the heart during the performance of such operations. His conclusions are, briefly:—

The use of the trephine affects the heart's action less than that of the chisel. On uninjured skulls the chisel has least influence when the instrument is small and is held at an angle of 30° with the surface of the bone. The use of the chisel upon the edges of an opening already made does not affect the heart.

Extradural "tamponade" has a much more marked bad effect upon the heart's action than pressure applied directly to the brain substance.

Washing out the lateral ventricle has no marked bad effect so long as care is taken to let the fluid escape freely.

Opening either the left or the right pleural cavity has a very marked effect, causing at first irregularity and then weakening of the force of the action of the heart.

Continued washing out the pleura with cold (11° C.) water, or hot (38° C.) has a very bad effect upon cardiac action, slowing it markedly, it may even be fatally.

The chemical composition of the fluid does not seem to make any difference.

With regard to abdominal operations, the experiments show that continued irritation of the nerves in either healthy or inflamed peritoneum slows the action of the heart, and may even arrest it fatally.—(*Centralbl. f. Chir.*, 14th June, 1890.)—D. M'P.

GYNÆCOLOGY AND OBSTETRICS.

By E. H. LAWRENCE OLIPHANT, M.D.

Removal of the Puerperal Septic Uterus.—In commenting on a case, recorded by Dr. Stahl in the *Deutsche Med. Zeitung*, the *New York Medical Journal* for 30th August, 1890, makes the following editorial remarks:—The patient was a primipara, 35 years of age, suffering with a subserous fibroma of the uterus. Her labour was spontaneous, but the membranes were completely torn away at the border of the placenta, and remained *in utero*. Puerperal septic endometritis resulted, for which curetting, with disinfection of the uterine cavity, was done. Notwithstanding, puerperal sepsis resulted, with thrombosis of the pelvic veins and threatening general symptoms. Softening of the nodes of the fibroma was apparent, and the author performed supravaginal amputation of the uterus and employed extra-peritoneal treatment of the stump. The conclusion from this case is that the membranes should be removed, if possible, immediately after the removal of the placenta, or they may bring about serious disaster to the patient.

Let us hope the conclusion may not be drawn that, if the membranes are not removed and sepsis takes place, amputation of the uterus will be the proper thing to do. It would be obviously unfair to say it should not have been done in this case, for the gentleman in charge of the case was probably a better judge as to its gravity than one could possibly be from the reading of a brief history. The moral that must always be drawn from the record of such cases is that it may furnish an excuse for many a similar operation, where other means would be more suitable. Certainly, in puerperal endometritis, as cases

go, even when complicated with subserous myomata, he would be a dangerous man who would counsel extirpation of the uterus as a means of treatment. In the balance, which would weigh the heavier—we mean in the average, yes, the majority of cases—a puerperal septic endometritis, or the dangers of the supravaginal extirpation added to the enfeebled condition resulting from sepsis? We leave out of consideration the question of removal of an important organ in a state of full functional power. The recent words of Greig Smith are golden words, that to sweep away the reproductive organs is retrograde surgery, unless it is necessary to save life.

Transmission of Tuberculosis from the Mother to the Fœtus.—The January (1890) number of the *Archives de Tocologie* gives an abstract of a paper by Sanchez-Toledo on this subject. It is an incontrovertible clinical fact that, in a large number of cases, tuberculosis is hereditary. Messrs. Landouzy and Martin, among other experimental investigators, have concluded from their researches that the specific bacillus passed directly through the placenta, and, as they did not find it in their *post-mortem* examinations, they believed that it remained in a latent state in the fœtus, and that it waited only for favourable conditions for its growth and development. But other observers, such as Grancher and Strauss, Nocard and others, have not been able to demonstrate this passage of the Koch bacillus to the fœtus. They inoculated rabbits with fragments of fœtus, the offspring of women or of lower animals which were tuberculous, without producing tuberculosis in the inoculated animals. Sanchez-Toledo carried on these experimental studies by injecting pure cultivations of the Koch bacillus into the jugular vein of gravid rabbits. These rabbits became tuberculous, and died either during or after gestation. But the fœtus was never found to contain the bacillus; and the inoculation of these fetal livers or spleens never produced tuberculosis, nor did cultivations of their blood ever produce the Koch bacillus. His experiments were numerous, and extended to 35 gravid females and 65 fœtuses born of these mothers. They are very important in their bearing on the question of the hereditary transmission of tuberculosis, and instructive in so far as they show once more that the placenta is an efficient instrument for the filtering out of microbes. According to Malvoz, the placenta is not affected by the tubercle bacillus, whence the absence of transmission of the bacillus to the fœtus when known to exist in the mother. The author explains this by the fact that the Koch bacillus travels rather by the lymphatics than by the blood-vessels.

After-Treatment of Obstetric Cases.—The author of a paper read before an important medical society in New York, and published in the *Boston Med. and Surg. Journ.* for 28th August, 1890, believes that the most common sources of trouble after confinement are lacerations of the cervix and arrested involution, and pleads for non-operative treatment. The following paragraphs, however, will probably strike most of our readers as being a good specimen of the results of too close attention to special points, to the neglect of general principles (specialism in one of its objectionable forms), and also of the results of being too strictly logical:—

“The treatment which he practised and advocated after ordinary labour was as follows:—He kept the patient in bed for four weeks, and during fourteen to twenty-one days of this time she was to be kept strictly on her back. At the end of twenty-one days he made an examination in Sims' position. After this, hot vaginal injections were employed, after the manner of Emmet, if no laceration were found to remain. If there were any lacerations the injections were to be omitted, as tending to interfere with the healing process. At the end of four weeks, if there were no abnormal conditions present, the patient was permitted to get out of bed; but before she did so she was placed in the genu-pectoral position, and the uterus was carefully supported before and behind by borated glycerine cotton pads. Finally, the physician was to make an examination of the patient once a month for a year after her confinement,

in order to see that no displacement of the uterus or abnormal condition had resulted.

"In hospital and charity work such a course was impracticable; but in private practice it should be insisted upon, and it would readily be consented to by the patient if she were properly educated up to it."—D. M'P.

On the Correlations of the Sexual Functions and Mental Disorders of Women.—In the *British Gynaecological Journal* (xxiii, November, 1890) the most important paper is one by Dr. Robert Barnes "On the Correlations of the Sexual Functions and Mental Disorders of Women." This subject, Dr. Barnes thinks, might now be approached with greater hope of solution than at any previous time, because of the advances made in late years by both gynaecology and psychology. What we chiefly want is a collection of reliable data, and he refers with regret to the loss of a collection made by Professor Coste of uteri and ovaries from women who had committed suicide during menstruation. The paper, and the discussion that followed it, indicate very well the difficulties surrounding the subject, and the immense number of still undecided questions related to it—e. g., What is the effect of oophorectomy or of hysterectomy on the mind of the patient? Has disease of the sexual organs greater tendency to induce insanity than that of other organs? While, admittedly, the symptoms of sexual disorders often accompany mental disease, are they the causes or the effects of the mental condition? Is there any connection between insanity appearing in pregnancy or puerperium and some previous condition, as we have between the chorea, ague, &c., of pregnancy and previous attacks of these diseases? Is the insanity of pregnancy, in which the physical condition is one of increased tension, different from that of puerperium, in which the physical condition is the reverse? Does degeneration of the sexual organs, an approach so far to the male condition, predispose to mental disease? What relation has hysteria to sexual disorders on the one hand, and to insanity on the other? These and many other questions are suggested as requiring solution.—J. K. K.

"Transactions of the Obstetrical Society of London," vol. xxii, Parts II and III.—In Part II Dr. Herman gives the results of an investigation into the change in size of the chest and abdomen during the lying-in period, and the effect of the binder upon them. He tried three series of cases—one without binder, one with ordinary binder, and one with firm binder—and found that the measurements were not appreciably influenced. He concludes, therefore, that the binder is only of use for the comfort it gives the puerpera. In the discussion that followed, Dr. Champneys expressed the belief that the binder prevents pendulous belly, and Dr. Braxton Hicks that it tends to prevent hæmorrhage. The rest of Part II is mainly occupied by a paper by Dr. Cullingworth on "Vaginal Hysterectomy for Cancer," and the discussion thereon. Dr. Cullingworth inclines strongly to advocate extirpation in preference to supra-vaginal amputation, and quotes recent statistics which give the mortality of the operation at about 5 per cent. He believes that the disease spreads from the cervix to the body of the uterus in a greater proportion of cases than is usually believed in this country.

Part III is chiefly taken up with an elaborate and valuable paper by Dr. Boxall on "Fever in Childbed." This is based on 2,762 cases observed in the General Lying-in Hospital. The most important points brought out are—(1) That a decline in the number of cases affected with fever, and a diminution in the duration and height of the fever in affected cases, have resulted from the use of antiseptics during and after labour; (2) That with the decline of the fever-rate the death-rate also declined; (3) That these improvements have been chiefly marked during the use of sublimate as the antiseptic—carbolic acid, Condy's fluid, &c., having given inferior results; and (4) that the antiseptic solution is better in strong than in weak solutions, the strength of sublimate he recommends being 1 in 1,000 for the hands, 1 in 2,000 for the early douches, and somewhat weaker afterwards.—J. K. K.

"The British Gynæcological Journal."—The May and August parts (xxi and xxii, 1890), contain the usual variety of interesting matter. Cancer of the uterus and its treatment occupy a large portion of the May part. Dr. Macan strongly advocated vaginal extirpation in preference to less radical measures. Dr. Jessett thought that in some cases high amputation of the cervix is sufficient. Dr. Bantock thought that if he saw a case early enough he might perform amputation of the cervix, but in the condition usually met with he would advocate extirpation. Dr. Inglis Parsons advised the trial of a strong electric current—five to six hundred milliamperes for, say, thirty seconds—on the ground that it killed the cells, and brought on atrophy, degeneration, and subsequent absorption. The difficulty acknowledged by all was that of recognition early enough in the disease, many of them (Bantock, Reeves, &c.) refusing to recognise the microscope as of any aid in the diagnosis.

Another important discussion was on pelvic abscess. R. T. Smith reviewed the various kinds of this abscess, some originating in *cellulitis* post partum, or after operation, or from chill during menstruation, others in *peritonitis* from affections of tube or ovary; the former tending along the lines of connective tissue towards the surface, while the latter, forming encysted tumours, tend to perforate adjacent organs.

Mayo Robson, in an important paper, discussed the modes of treatment by (1) *aspiration*—efficient in small and localised abscesses; (2) *subperitoneal laparotomy*—only safe when the abscess is approaching the side of the pelvis; and (3) *abdominal section*—the method of widest application. Mr. Robson narrated examples of all these methods.

Dr. Bantock asserted that he had only seen one pelvic abscess arising from cellulitis, all the others having arisen from mischief affecting the tube or tube and ovary.—J. K. K.

DISEASES OF THE EYE.

By FREELAND FERGUS, M.B.

Transactions of the Ophthalmological Society.—The tenth volume of the *Transactions of the Ophthalmological Society* has just been issued, and in our present number we propose giving a short synopsis of its contents.

The President's address, given by Dr. Hughlings Jackson, is an appeal to physicians and to ophthalmologists to work hand in hand in the investigation of diseases of the nervous system. He says, "Unless the physician uses the ophthalmoscope by routine, he will often enough overlook the best evidence—and, I am convinced, in some cases the only decisive evidence—of gross organic disease of the brain there is to be had; and if, as is often the case in a physician's practice, sight be good, he will not surmise that there is anything wrong with his patient's optic nerves." Again, "I urge young physicians to study eye diseases at an ophthalmic hospital, or at an ophthalmic department of a general hospital."

The following remarks also are pregnant with meaning:—"It is very remarkable that many patients with optic neuritis die suddenly or rapidly, and when seemingly in fair general health, sometimes at work, certainly most unexpectedly; I have often urged this on the attention of physicians. In some cases of cerebral tumour the patient may be acutely ill; he may have an illness very like tubercular meningitis in many of its symptoms; there may be slow and unrhythmical pulse and irregular respiration, there are retracted abdomen, constipation and vomiting. I suppose that when a patient who has post neuritic atrophy tells us that his sight failed after bilious or gastric fever, he has had such an acute illness." Jackson indicates a belief, that when a tumour causes optic neuritis it is trying to make the patient blind, that when it produces such "vital" symptoms it is trying to kill him. He quotes Buzzard as indicating that these vital symptoms depend upon morbid changes

in nerves, such as the pneumogastric, perfectly comparable with the changes seen with the ophthalmoscope in optic neuritis.

The "Pathogeny of Concomitant Squint" was the subject of the Bowman lecture by Hansen Grut, of Copenhagen. It is certainly one of the clearest and best contributions which has appeared for many a long day on this important question. The lecture is of considerable length, and the argument seems irresistible, and those who are interested in the matter ought to read it for themselves; we can only mention very briefly a few of the more important points.

He starts with the statement that the concomitancy of lateral and convergent movements is a result of habit and exercise—i. e., that there are no special centres for such movements, but that these movements are the result of acquired habit. Again, squint, according to the author, must depend either on some defective anatomical position or on some abnormality of the innervation. In his opinion, the vast majority of cases are due to the second cause. Having stated these preliminaries, the next thing considered by Grut is the anatomical position of rest of the eyes. This he believes to be one of divergence, and the five reasons which he assigns for this belief seem to us very conclusive. This opinion, of course, is the very opposite from Stilling's; but we think that Grut has quite succeeded in showing that Stilling's views are not correct. The patient does not, as a rule, assume anatomical position of rest, for then there would be diplopia, but a functional one of parallelism. Grut then recalls the experiments and views of the immortal Donders as to the meter angle and the accommodation moving to equal amounts in emmetropia, and makes the three following very suggestive statements:—

"In *emmetropia*, nearly always perfect harmony; the meter angle and accommodation correspond. The exceptions: convergence, being in *excess* of accommodation, is exceedingly rare."

"In *hypermetropia*, harmony between meter angle and accommodation, which would produce latent convergent squint, is certainly not the rule, but *infinitely more frequent* than in *emmetropia*."

In the main, Grut's views are those of Donders, but with considerable modification. "When the state of refraction and accommodation induce a tendency to squint, it is a trick, an *art*, to resist squinting, and it has to be learned."

This trick certain persons never learn, and hence they squint. "Convergent strabismus originates, and continues as the result of, an innervation which effects in the interni a shortening exceeding in amount that which is desirable." "Divergent strabismus is the expression of a relaxation of convergence innervation, which permits of the eye taking up the anatomical position of rest."

Habit will make the convergent squint of hypermetropia permanent—i. e., when the patient is not able to accommodate without converging; and there are very many in this condemnation.

In speaking of divergent squint in myopia, Grut at once throws over the idea of its being preponderance of the external recti over the internal. He believes it to be the causation of convergence, allowing the eyes to take their position of anatomical rest.

These are the chief points of a most interesting and lucid paper. The rest of it is occupied with a criticism of the views of Schmeigger, Alf. Græfe, Stilling, and others.

Dr. Rockliffe records an interesting case of cephalic tetanus. This somewhat rare malady came on after a slight trivial wound of the left orbit. There were ptosis and facial paralysis of the same side of the face, with trismus and slight pharyngeal and respiratory spasms.

The treatment consisted in opening up and cleaning the wound under chloroform, and in giving frequently repeated doses of bromide of potassium and chloral. The patient ultimately recovered.

"Lymphoma of the Conjunctiva" is the subject of a very suggestive paper by Dr. Thomas Reid, in which the author attempts to regard various morbid conditions of the conjunctiva as modifications of normal structure. He says—

"An examination of the specimens shows that the presence of lymphoid tissue, or perhaps more correctly lymphoid infiltration, is a frequent if not constant pathological condition in certain forms of conjunctivitis."

The follicle, Dr. Reid believes, is formed secondarily to the lymphoid infiltration. He describes the changes which occur in the follicle, leading either to the discharge of its contents or to their absorption. These follicles are found both in follicular conjunctivitis and in trachoma. "If it be admitted that in all cases the presence of lymphoid tissue is at one stage or other a constant element, the distinction that has been drawn between follicular and trachomatous conjunctivitis is more a clinical than a pathological one." Again, "Whatever hastens this eliminative process will promote the natural cure of granular ophthalmia, and in our hands stimulants and absorbents have always proved distinctly more serviceable than any form of astringent."

Priestley Smith writes an article in which he shows, from carefully collected statistics, that glaucoma is very frequently associated with a diminution in the size of the cornea. From his figures it would also appear that the size of the cornea does not vary much with the state of the refraction.

"Tuberculosis of the Iris."—Dr. Hill Griffith describes a case of this somewhat rare affection. The tumour grew near the periphery of the iris, involving the ciliary body. The eye was enucleated, and the child died nine months afterwards from tubercular meningitis.

"Glaucoma after Cataract Extraction," is the subject of a paper by Mr. E. Teacher Collins. He describes the results of the examination of ten eyes, and finds that in nine of them there was adherence of the lens capsule to the corneal wound; in the remaining case the iris was attached. Such a condition of matters must lead to a certain plugging of the iris angle. This of itself seems sufficient in many cases to cause glaucoma. In others, he thinks that inflammatory conditions—*e.g.*, kerako-iritis, or the irritation of the ciliary processes, caused by dragging of the adherent capsule, are also important factors. The practical point seems to be to get the wound to heal as quickly as possible, and to see that it is free both from iris and capsule.

"Optic Nerve Atrophy in Smokers."—Mr. Lawford describes several cases in which he felt justified in giving a favourable prognosis when he believed that he was dealing with tobacco amblyopia. In the cases under discussion, however, the favourable view he was inclined to take was by no means justified by the result, for the nerves steadily atrophied and the sight did not materially improve. He is inclined to think that the tobacco, at least, has something to do with the condition of matters. The only point in which these cases differed from ordinary ones is, that not only did they present the usual central scotoma, but also a retraction of the field of vision at the periphery.

A discussion on the artificial ripening of immature cataracts, and two cases of hemianopsia, complete the more important contents of the volume.

Books, Pamphlets, &c., Received.

On Severe Vomiting during Pregnancy, by Graily Hewitt, M.D.
London: Longmans, Green & Co. 1890.

Lectures on Diabetes, by Robert Saundby, M.D. With Illustrations.
Bristol: John Wright & Co. 1891.

The Medical Annual and Practitioner's Index. 1891. Ninth year.
Bristol: John Wright & Co.

Transactions of the Royal Academy of Medicine in Ireland.
Vol. VIII. Edited by Wm. Thomson, M.A., F.R.C.S. Dublin:
Fannin & Co. 1890.

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ORIGINAL ARTICLES.

RHEUMATISM AND CHOREA AS COMPLICATIONS
OF SCARLET FEVER.*

By JOHN H. CARSLAW, M.A., M.B.,

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EVEN before scarlet fever was recognised as a distinct disease by Sydenham in the latter half of the seventeenth century, the articular element in a certain class of cases of febrile disease had not been overlooked. Sennert, in the beginning of that century, describes what must have been cases of scarlet fever under the belief that they were only another form of measles; but he is quoted by Gresswell† as mentioning in regard to them that, as the patients were recovering from the fever, the elements of the disease were carried to the joints of the extremities, and there caused pain and redness. According to Senator, in Ziemssen's *Cyclopædia*, it was Pidoux and Graves who first directed special attention to the occurrence of the rheumatic complication of scarlet fever, and it is much insisted upon in the clinical lectures of Trousseau.‡

More than one answer has been given to the question why patients suffering from scarlet fever should be specially subject to these attacks.

* Read before the Glasgow University Medico-Chirurgical Society.

† *Natural History of Scarlatina*, Oxford, 1890.

‡ Sydenham Society's translation, vol. ii, pp. 181, 188.

Eustace Smith, in his book on *Disease in Children*, remarks—"Whether the disease is to be looked upon as a true rheumatism quite independent of the scarlatina, or as an arthritis resulting from septicæmia, or as a further manifestation of the scarlet fever poison which may fasten upon the joints as it may fasten upon the kidneys or the throat, is still a matter of discussion. The rheumatic attack certainly follows the ordinary course of that disease; it frequently attacks the serous membranes in and around the heart, and the joint inflammation subsides, as a rule, after a day or two, although in exceptional cases it may end in suppuration. This may, however, occur in cases where there is no suspicion of scarlet fever."

Dr. Cheadle's* conclusion is that "it seems clear that either genuine acute rheumatism does occur in the course of scarlatina or else that the scarlatinal virus itself occasionally produces an inflammation of joints and serous membranes, and a nervous choreic disturbance, analogous to, and indistinguishable from, that set up by the rheumatic poison."

Another view is taken by Dr. Ashby. In a lecture on the "Connexion between Scarlet Fever and Heart Disease," published in the *Lancet*, 22nd May, 1886, he speaks of the commonest form of joint affection in scarlet fever of children, being a form of synovitis, which is doubtfully rheumatic in character, and is not often accompanied by endocarditis. As points distinguishing these attacks from acute or subacute rheumatism, he mentions their more fugitive character, their special tendency to attack synovial membranes on the backs and palms of the hands, finger joints, soles of feet, and cervical vertebræ, their occurring mostly from the seventh to the ninth day of the scarlet fever, their affecting nearly always cases in which there has been severity of the initial symptoms, and their being commoner in some epidemics than in others. He adds that "apart from synovitis, attacks indistinguishable from true rheumatism are liable to occur at the end of the third week or during the fourth."

Henoch also prefers the term synovitis, at least for the milder forms.

Passing from these differences, there is yet another point in the relationship of scarlet fever to rheumatism which should not be overlooked. Cheadle, in the article devoted to Rheumatism in Keating's *Cyclopædia of the Diseases of Children*, mentions as "the common and immediate cause of rheumatism"

* *The Various Manifestations of the Rheumatic State as exemplified in Childhood and Early Life.*

"chilling of the surface of the body." This is generally recognised, as is also the fact that the condition of the skin has a great deal to do with the effect of this exposure to cold. We shall see the importance of this when we come to consider the stage or day of illness at which rheumatism usually develops during scarlet fever, and I would only remind you at present of the fact that the skin is usually very specially affected during scarlet fever, both by the rash and the desquamation. If the skin condition act as a cause, it must be only one of several, because there is the same hyperæmia in measles without rheumatic complication, and though acute rheumatism does occur in other febrile conditions (*e.g.*, puerperal and enteric fever, as quoted in Ziemssen), still such instances are very rare. Dengue, whose relations to influenza were fully debated last year, is a disease known in this country only by repute; in it there is the association of fever, joint affection, and a rash; indeed, one of its numerous synonyms is "*scarlatina rheumatica*." Roberts suggests that scarlet fever may lead to rheumatism "by interfering with the excretory functions of the skin."

Having thus glanced at the history and theory of the connection between scarlet fever and rheumatism, I would propose, in considering *other* features of this connection, to refer not only to the literature of the subject, but also to a series of cases of scarlet fever which I had under my care in Belvidere Fever Hospital between September, 1888, and July, 1890. In order to avoid fallacy as far as possible, I have excluded all cases which were admitted after the eighth day of illness, and also those which died before the end of the first week. There are left 533 cases of scarlet fever, and of these there are no less than 62 which showed at one stage or another of their illness some joint affection or some involvement of the heart, and these 62 I propose now to analyse. As I have just indicated, they did not all present what would be regarded at first sight as declared rheumatism; still, I think you will agree that it is not unfair to group them together. In the very great majority—indeed, in 59 out of the 62—there was the occurrence of painful swelling of the joints, which disappeared without suppuration, and which we have seen most authorities admit to be rheumatic; one we shall see had no rheumatism, but had chorea and endocarditis; in two the joint affection might be regarded as possibly septic, but in one of these two—a boy named G. W., aged 5 years—there was distinct family history of rheumatism, as shown by a brother and sister in hospital at the same time developing

rheumatic complication. G. W.'s attack of scarlet fever was a very severe one; he was admitted on 1st October, 1889, on the sixth day of illness, with swollen neck, discharging nose, and a very sore mouth; he had diarrhoea with foul-smelling motions. On 6th October there were occasional indefinite pains referred to the joints of the arms; nothing abnormal was detected on physical examination of the heart, but its action was very rapid, and possibly an apical systolic murmur was overlooked; on 9th October he developed orthopnoea, and on the 11th he died. There was in the throat and nose sufficient explanation of septicæmia, but on the other hand the family history, and the orthopnoea as suggesting cardiac disease, pointed towards rheumatism.

The other case, of possibly septic origin, was that of P. L., who was admitted at about the third week of his scarlet fever illness, desquamating and with nephritis, but without special affection of the throat, nose, or ear. This was on 21st October. On 3rd November the strictly renal symptoms were rather improved, but painful swelling of the right thigh developed. On the 4th there seemed to be fluctuation at the inside of the knee; there was no special localised redness; there had been recent increase of pyrexia. On 10th November the swelling had localised itself over the inside of the knee and the outside of the hip. Next day the abscess at the inside of the knee was opened. On the 12th, deep fluctuation was distinct over the hip, behind and above the trochanter, and some movement of the head of the bone could be felt, but no grating. On the 19th he died. A full *post-mortem* was refused, but examination of the hip was allowed, and on incision a large abscess was found admitting to the hip-joint with the head of the femur and acetabulum eroded. (Specimen shown). The case illustrates a distinctive arthritis, whether its origin were septic or not.

Excluding these two cases, we have 60, so that our percentage of rheumatic cases was 11. Recent statistics we find quoted in the article in Keating's *Cyclopædia*, already referred to, where Ashby, of Manchester, is said to have met with only 12 cases out of 500 cases of scarlet fever, but possibly the cases of what he calls true acute rheumatism occurring during convalescence are omitted. In Dr. Gresswell's thesis on the *Natural History of Scarlatina*, statistics are given for 652 cases of scarlet fever from one of the hospitals of the Metropolitan Asylums Board. Of these, only 29 had any joint affection. These numbers are strikingly out of proportion to those I have just given for the present series of cases, and it

may be asked if this is due in any part to differences of climate.*

With regard to the seasons of the year, I have taken the percentages for each three months, and found that in each autumn there was a higher percentage than in the following winter, and taking the year from September, 1888, to September, 1889, there is distinctly a falling off in the spring and summer as compared with the winter months. When, however, we compare the three spring months of 1889 with those of 1890, we find only 5·1 per cent in the former year against 20 per cent in the latter, so that we cannot feel justified in drawing conclusions from these figures.

These discrepancies lead me to remark that cases of scarlatinal rheumatism were often noticed to occur *in runs*; and, just as sometimes in a measles ward there would be little epidemics of unexplained diarrhœa, so in a scarlet fever ward there would occur one case of rheumatism after another, while cases in an adjoining scarlet fever pavilion, subject to exactly similar conditions, escaped. And, as if to prove that neither the individual building nor the nursing could have been to blame, this second pavilion might have its turn of it a month afterwards, while the first escaped. In this connection let me refer to the fact as mentioned by Senator,† for acute rheumatism apart from scarlet fever, that the disease “in certain years is so unusually prevalent in a particular country as to assume the character of an epidemic. Some of the older writers on medicine (Lange, Pringle, &c.) actually speak of ‘epidemics of rheumatism,’ though the essential feature of an epidemic disease—infective power—is wanting to rheumatism. It is probable that atmospheric influences may contribute to this occasional increase of frequency, but we have no trustworthy data on the subject.”

Age and sex are important in the consideration of any disease. How do they influence scarlatinal rheumatism?

In classifying our cases, I have included all the 62 I

* With a view to determining to what extent local influences might explain this difference of percentage, I have made a comparison of the number of rheumatic patients (apart from scarlet fever) admitted into the London Hospital and the Glasgow Royal Infirmary. For the statistics as regards the former I am indebted to Dr. Jas. H. Nicoll :—

	London.	Glasgow.
Total number of in-door medical cases in 10 years (1880-89),	37,588	22,662
Total number of rheumatic (acute, subacute, and chronic) in 10 years (1880-89),	3,296	2,055
Percentage of rheumatic cases,	8·7 %.	9 %.

† Ziemssen's *Cyclopædia*.

mentioned—*i.e.*, the two possibly septic ones are not set aside:—

Sex—

Of 214 males, 19 had rheumatic affection, = 8.0 per cent.

Of 319 females, 43 " " = 13.5 "

Giving a striking preponderance of females.

Age—

Only one patient under 3 years had any articular affection, and that was P. L., from whom the specimen shown was obtained.

Between—

1 and 5 years, 13 rheumatic cases out of 193, = 6.7 per cent.

6 and 10 years, 18 " 186, = 9.7 "

11 and 15 years, 12 " 84, = 14.3 "

16 and 20 years, 7 " 38, = 18.4 "

Above 20 years, 12 " 32, = 37.5 "

Or omitting those above 20 years known to have had previous attacks of rheumatism, there are left—

9 rheumatic cases out of 32, = 28 per cent.

Taking age and sex together we get—

Between 1 and 5,

	Males.	Females.
4 male rheumatic cases out of 87, = 4.6 per cent.
9 female " 106, =	...	8.5 per cent.

Between 6 and 10,

6 male rheumatic cases out of 70, = 8.5 per cent.	...
12 female " 116, =	10 per cent.

Between 11 and 15,

4 male rheumatic cases out of 31, = 12.9 per cent.	...
8 female " 53, =	15 per cent.

Between 16 and 20,

2 male rheumatic cases out of 17, = 11.8 per cent.	...
5 female " 21, =	23.8 per cent.

Above 20 years,

3 male rheumatic cases out of 9, = 33.3 per cent.	...
9 female " 23, =	39.1 per cent.

Or omitting cases above 20 years known to have previous rheumatic attacks—

2 male rheumatic cases out of 9, = 22.2 per cent.	...
7 female " 23, =	30 per cent.

This preponderance of *female* rheumatic cases over male, and the *increasing* preponderance of females as we pass from

childhood to adult life, quite correspond with Gresswell's statistics, already alluded to. So does the increased proportion of all cases affected with scarlatinal rheumatism as age advances; and this is quite in keeping, too, with the statistics of rheumatism as a separate disease. So also does the preponderance of female cases in the patients below 15 years tally with the facts for rheumatism alone, though after that age ordinary rheumatism becomes as common among males as among females, whereas in the case of scarlatinal rheumatism the female proclivity continues.

To have some idea as to whether the character of the initial attack of scarlet fever had any influence in determining rheumatic complication, I have classified the 60 cases as slight, and moderate, and severe:—13 had slight attacks of scarlatina to begin with; 33 had moderate; and in 14 cases the attack was severe. These figures show at any rate that no case of scarlet fever is free from the possibility of rheumatism, even though the initial symptoms have been slight.

An important point is the exact stage of the scarlet fever at which the joint affection begins. This is generally regarded as the end of the first or the beginning of the second week, and the following figures fully confirm this impression:—

In only 5 out of the 62 cases was the onset after the second week; in 13 cases it was between the ninth and the thirteenth day; in 43 it was not later than the eighth day; and in 34 it was between the fifth and the seventh. In one case rheumatism began at the very beginning of the scarlatinal attack, and on admission, a few days afterwards, there was evidence of mitral disease. A doctor had examined the heart twice during the illness at home, and had told the mother that, at the time of his examination, there was no heart trouble; so that we may presume that the endocarditis developed during the scarlatinal rheumatism, and was not of old standing.

The end of the first week, then, is by far the most frequent time for the onset of this complication, and the fifth, sixth, and seventh are the favourite days. Let me remind you that this is just the time when the temperature is reaching the normal, the rash disappearing, and desquamation about to begin. The skin has been warm and uncomfortable from perspiration; the patient has, perhaps, been restless; the arms are thrown out from beneath the bedclothes, and there is thus a possible harmful exposure to cold. That this has some influence in inducing rheumatism would seem to be borne out by the fact that, of all the joints, the wrists and joints of the hands suffer most. Out of 56 cases in which I have

specially noted the joints involved, there were 45 in which these joints of the hands and wrists were complicated. The other joints throughout the body suffer much less frequently. When many joints were affected, they were usually attacked in rotation. Swelling and pain in each would subside after a few days, and it was only exceptionally that they returned. Occasionally serous effusion into the knee-joints persists longer—perhaps for weeks. This fact is mentioned by Ashby, Henoch, and Thomas, and is illustrated by one of the cases of this series (brother of G. W.)

Another case, in which the disappearance of the rheumatism was not so speedy as usual, is that of A. D., aged 21, whose rheumatic complication began on the fifth day of her scarlet fever illness, and involved the wrists, fingers, and ankles, but chiefly one of the shoulders. This shoulder continued to trouble her after the pain had gone and the temperature was long quite normal, being noted as still stiff as late as the twenty-ninth day of illness.

Suppuration we have already seen to occur only in exceptional cases.

The prognosis in scarlatinal rheumatism is generally favourable. Among the cases I am detailing to you there were, however, 7 deaths—2 I have mentioned as possibly septic; 3 died from the severity of their attacks of scarlet fever; 1 died suddenly (probably from embolism); her heart was diseased; and 1 died from a combination of complications, to be detailed presently.

As regards the influence on the *temperature* of the onset of rheumatic complication, it is remarked that this varies exceedingly. Some cases are affected but little, there being a rise perhaps to 100°; in one it was only to 99·2°, which we can hardly count to be abnormal. On the other hand, many showed distinct pyrexia, or increase of pyrexia if the temperature was at the time elevated.

Let me next refer to the proportion of cases in which the *heart* was involved. Care must be taken not to regard every murmur heard during scarlet fever as evidence of organic cardiac disease. In many of the cases there are notes of murmurs—or, at least, of softness of the sounds—detected during the pyrexial stage of scarlet fever which gradually but completely disappeared. Henoch's remarks upon this subject are very much to the point.* Excluding, however, all doubtful bruits, there were among the 60 rheumatic cases 8 in which there was heart complication—1 of pericarditis and

* Sydenham Society's translation, vol i, p. 483; vol. ii, p. 208.

pleurisy; 4 of peri-endocarditis; and 3 of endocarditis alone. The case in which there was pericarditis with pleurisy would be classed by Dr. Ashby as one of true rheumatism occurring late in convalescence from scarlet fever, and specially liable to attack young adults. The patient, J. F., aged 18, was admitted with scarlet fever on 28th February, 1889, and had so far convalesced as to be able to be up, when, on 8th April, he had painful swelling of the inside of the left foot, with pain and slight swelling of the knees. Other joints subsequently became involved. On 11th April he developed acute pericarditis, with distinct friction and increase of cardiac dulness, which, on the following day, measured $6\frac{1}{2}$ inches transversely, but by the 15th had become natural in size again. There was also some pleurisy, with friction and weakened respiratory murmur over the base of the right lung. By 20th May physical signs had disappeared, and he was once more able to be up.

In 6 of the other heart cases the rheumatism began during the first week, while in the eighth it was delayed until the nineteenth day.

In none of Gresswell's cases of rheumatism was there any discoverable cardiac mischief; one of his patients had pericarditis without joint affection.

Ashby, in the lecture already quoted from (*Lancet*, 22nd May, 1886), had in 20 cases of "scarlatinal synovitis" no endocarditis—in one a temporary pericarditis and in another a pleuro-pericarditis.

The ages of the patients I have mentioned as showing cardiac complication (6, 7, 13, 15, 18, 18, 26, 47) show that while the cases as a whole have escaped with very little heart mischief, the children are especially remarkable in this respect. This is in striking contrast to their well known susceptibility to heart disease in the course of ordinary rheumatism. Ashby * gives 75 to 80 per cent as the proportion of children with rheumatism who develop endocarditis, and similarly high percentages are quoted by Cheadle. While there is a relative less frequency of this involvement of the heart in the joint affections of scarlet fever, still the fact of its occurring sometimes is not to be overlooked, and an antecedent attack of scarlet fever must always be regarded as a possible factor in the etiology of heart disease.†

Let us pass now to consider the cases in which chorea arose in connection with scarlet fever.

In rare cases where scarlet fever has occurred in the course

* *Diseases of Children*, p. 280.

† Cf. Henoch, vol. ii, p. 207.

of a case of chorea (chorea being the primary illness), it has behaved irregularly—sometimes aggravating the chorea—sometimes tending to its recovery. On the other hand, it is mentioned in various treatises that patients convalescent from scarlet fever are occasionally, but very occasionally, seized with chorea; so are convalescents from measles and from enteric fever, or indeed from any acute disease. Henoch quotes 4 cases of chorea in connection with scarlet fever (two during the attack and two following it), but he regards chorea as a rare sequela of that fever in opposition to Bouchut, whom he mentions as holding that post-scarlatinal chorea often lasts only six to eight hours.

In each of the *three* cases which I have to submit to you, the chorea developed after the eruptive stage was quite over; in two of them it developed about the sixth week of their illness. All three patients were *girls* (and chorea is known to occur much more frequently in females); their *ages* were 13, 7, and $3\frac{1}{2}$ respectively, so that two of them at least were within the term of life when chorea is most common. Apart from their connection with scarlet fever, they form an interesting group, as illustrating the close association of chorea, rheumatism, and inflammation of serous membranes—in one there was no rheumatism, but there was endocarditis—in another there were chorea and rheumatism without heart affection, while in the third there was practically everything. It may make the fact of the rarity of chorea after scarlet fever even more striking if I mention that these three cases were the only ones occurring in the *whole* hospital (Belvidere) during the period over which these notes extend.

M. D., æt. $3\frac{1}{2}$, was admitted 4th September, 1888, on fifth day of scarlet fever. On 9th September there was development of rheumatism with high temperature, and soft first cardiac sound, but no definite murmur. On the 26th the first sound was noted as "free from murmur, but very weak at the apex."

19th October.—"For some time there have been choreic movements of limbs, face, and tongue. No cardiac murmur; limbs weak; cannot walk; knee reflexes exaggerated, especially the right." Put on Easton's syrup.

17th November.—"Can walk and feed herself. There is now little awkwardness noticed except a turning of head and twisting of face that might be attributed to bashfulness." Otherwise also recovery good. Dismissed well.

J. S., æt. 7, was admitted 6th September, 1888, with attack of scarlet fever, which was uncomplicated by rheumatism, and

from which she was making a good recovery when, in the middle of October (sixth week of her illness) she developed chorea, principally, but not altogether, of the right side. The face, tongue, arms, and legs were involved. On 14th October it is noted "no heart murmur," and on 25th October "choreic movements continue intense; no cardiac complication."

3rd November.—"Temperature normal for long time, 102° to-night. Distinct systolic murmur at apex; to be kept quiet and put on milk diet."

12th November.—There are notes of an attack of albuminuria which had been superimposed upon the nervous and cardiac affection; "cardiac murmur as before." Digitalis begun in addition to arsenic, which she had had since 30th October.

4th December.—Digitalis stopped—pulse irregular.

6th December.—No albuminuria since 27th ult.; cardiac murmur much less loud; no irregularity; chorea almost better.

5th January, 1889.—Dismissed well. Chorea perfectly recovered from and cardiac examination not yielding any abnormality.

M. M., æt. 13, was admitted 14th March, 1889, certified "scarlet fever." Her illness was then of four days' duration: her throat congested and tonsils ulcerated, the glands of the neck enlarged and tender, the tongue strawberry, and a scarlatinal rash still present on trunk and limbs. Nothing abnormal was detected on physical examination of heart and lungs. The pulse was of good quality and the temperature only 100°. There was some pyrexia, however, on the following days, with only some indefinite abdominal pain to account for it, the temperature reaching the normal only on the tenth day of illness (20th March). On that day, too, she began to desquamate.

Between 20th and 28th March (tenth to eighteenth day) patient felt well; there was no fever, and convalescence seemed to progress favourably. On the 29th March there was return of pyrexia (100·2° in evening), and this was more striking on the 30th, when 103·2° was registered in the evening. On the 31st we had 100·6° A.M., and 103·6° P.M. (twenty-first day of illness); but in explanation of the rise there was now complaint of indefinite pains in the limbs, localised chiefly in the knee and ankle-joints, which, however, were neither red nor swollen. Next morning (1st April) the right wrist was swollen, tender, and painful. The period of the illness led particular attention to be paid to the urine,

and there was certainly no diminution of its quantity; on the evening of the 31st a slight trace of albumen was present, and this persisted to the close, but its significance was rendered doubtful by the coincident persistence of pyrexia.

On the evening of the 30th there was complaint of abdominal pain and tenderness, but nothing definite on examination. These symptoms were still present when on morning of 1st April there appeared a mottled, measley rash on the anterior abdominal wall. There was no catarrh, and the rash was then absent elsewhere, but extended subsequently to the thighs; it was not itchy and came and went, being seen so late as 12th April.

The complexity of the facts noted above, as present on 1st April, induced one to suspend judgment as to whether the pyrexia might be due to rheumatic poisoning or to sepsis possibly in connection with menstrual derangement—(the girl had menstruated once, some months before). Probably both elements were present. In any case anti-rheumatic treatment was adopted, and on 1st April, besides fomenting the abdomen and wrapping the painful joints in cotton wool, salicin was begun in 20-grain doses.

On the afternoon of the following day epigastric pain was complained of, and on the 3rd there developed definite signs of serious cardiac mischief. The heart's sounds were noted in the morning as "indefinite," but in the evening friction over the right ventricle could be heard, and there was suspicion of a systolic murmur at apex. Cardiac dulness was increased to the right and upwards, and further extension was evident next day (4th April). The articular pains were now less.

On the 6th April physical signs of a further lesion were detected, there being right pleurisy with effusion, the left base having also weak respiratory murmur. By the 10th the effusion on the right side had, in part at least, been absorbed; but on the left side dulness, weak tubular breathing, and faintly ægophonic vocal resonance were noted. At the latter date also the endocardial systolic murmur had for some days been quite definite. Articular pains were not entirely absent, and the knee-joints had become swollen.

On 12th April there began involuntary and irregular muscular movements, which in a day or two afterwards became intensified and declared themselves as chorea, affecting ultimately both sides of the face, the tongue, the eyeballs, all the limbs and the trunk. Fortunately the articular element had by this time subsided. These erratic movements continued until the close on the evening of the 16th April, although

patient seemed quite unconscious for some hours before death. During the last day or two there was some troublesome diarrhoea and sickness.

Temperature continued high, the evening temperature from 30th March onwards being always over 103° , and from 12th April as high as 104.8° or above it— 109.8° was registered just before death. Pulse was correspondingly high (126 to 158) and respiration latterly ranged as a rule from 45 to 60.

Treatment included salicin and alkalies as well as local remedies to painful parts. She had besides (at different times) tincture of digitalis with spirits of chloroform and aromatic spirits of ammonia; tincture of strophanthus; chloroform stupe to precordium; liniment of iodine and poulticing to chest; wine, brandy, champagne; chloral in large doses after the chorea began; tepid sponging, iced drinks, &c., during the hyperpyretic period.

Post-mortem Examination.—The body is exceedingly well nourished, and presents the appearance of that of an adult woman; the mammæ are developed. About the ankles and feet there is some desquamation; the left knee-joint is swollen.

There is no abnormal fluid in the abdominal cavity; but in each pleural cavity are found several ounces of serous fluid; flakes of lymph float free in that removed from the right side. There is extensive fibrinous exudation on the surface of the right lung, and some deposit also on the left where it adjoins the pericardium. On and near the surface of the right lower lobe there is a cicatrix or fibrous thickening of the size of a pea and containing some chalky matter. There is nothing further of importance on section of either lung.

The pericardium (unopened) has a transverse measurement of $5\frac{1}{2}$ inches; it extends to the right of the middle line. Six or seven ounces of serum escape on its being cut into.

The parietal layer of the membrane is very much thickened and its internal surface deeply congested. It and the visceral pericardial layer are covered with fibrinous exudation. This is particularly abundant upon the heart, whose surface presents, in some parts, a honeycombed, in others, a pectinated appearance. Isolated adhesive bands between the two layers are seen, and complete adhesion has taken place over great part of the apical half of the left ventricle. Mitral valve admits three fingers and on its auricular surface shows vegetations; there are vegetations also upon the adjacent (ventricular) surface of the aortic curtains at their lines of contact.

The spleen is united by fibrous adhesions to the diaphragm;

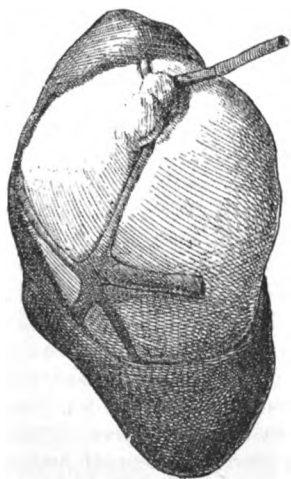
the organ is soft but not enlarged. The kidneys have non-adherent capsules, but are slightly enlarged.

In connection with the fatal issue in this case it may be interesting to know that Sturges,* from the study of 80 cases of death in connection with chorea, has concluded that "chorea, regarded as a disease of itself fatal, belongs almost exclusively to puberty, and especially to female puberty; its immediate exciting cause having distinct reference, in many instances, to conditions of unusual sexual excitement."

CASES OF HYDRONEPHROSIS OF UNUSUAL ORIGIN.†

By JOSEPH COATS, M.D.

HYDRONEPHROSIS, consisting of dilatation of the pelvis and calyces of the kidney, owes its origin to many causes, all of them involving a mechanical obstruction to the outflow of the urine. I have just encountered a case in which the cause was an unusual one, and worthy of record. The accompanying sketch was made by the camera lucida, the actual outline of the parts being directly traced by that means, and it gives of itself almost a sufficient explanation of the case.



It exhibits a kidney of which the pelvis is enormously dilated, bulging outwards from the hilum of the organ in a somewhat conical or pear-shaped form, the hilum being greatly enlarged so as to accommodate the dilated pelvis. The outline of the kidney itself is enlarged and it could be felt by manipulation that it was distended with fluid.

The kidney has been supplied by two principal arteries of which the larger is shewn in the sketch. This artery has four branches, three of which pass into the kidney along the anterior border of the pelvis, whilst the fourth has passed rather downwards and

* *On Chorea* (1881), p. 80.

† Read before the Pathological and Clinical Society, 9th February, 1891.

backwards. In its passage this artery has encountered the ureter and has crossed the latter shortly before its insertion into the apex of the pelvis. The drawing has been made with the lower extremity of the kidney upwards, and the ureter is seen passing in from the right near the upper part of the illustration. There is a deep groove produced by the artery, beneath which the ureter passes. The two rounded bulgings which here conceal the parts are, respectively, the dilated first part of the ureter, and the apex of the pelvis. The dilated piece of ureter could be brought out by pulling on the ureter, and it was then seen that, at the place where the artery crossed the ureter, the wall of the latter was greatly thinned, the muscular coat being apparently destroyed. The two bulgings could easily be distinguished as ureter and pelvis respectively, from the fact that the former was thick and white from the presence of a muscular coat, whilst the latter, like the rest of the pelvis, was markedly thin and translucent.

It may be added that the condition was not detected during life. The patient had been the subject of acute bronchitis with lobular pneumonia. The urine showed a distinct trace of albumen. The opposite kidney showed considerable enlargement, weighing $7\frac{1}{2}$ oz., and, as its structure was normal, it may be regarded as an example of compensatory hypertrophy.

It may be worth while to relate here two other cases in which hydronephrosis was produced by a somewhat unusual method, and one whose existence has been denied by some. The method referred to is an apparently congenital malformation in which the ureter does not pass off from the apex of the renal pelvis, so as to be directly continuous with it, like the tube of a funnel, but is connected with the pelvis at some distance above the apex, and so forms with it an acute angle. The effect of this is that the orifice is in the form of a slit in the wall of the pelvis, and is liable to be valved when the pelvis is filled. It will be noted that in both these cases the ureter was not dilated, and that in both the condition had escaped detection during life. It will also be observed that in one where the hydronephrosis was extreme, the opposite kidney presented compensatory hypertrophy, while in the other case, where a considerable amount of kidney tissue remained, there was little or no enlargement of the opposite kidney. Both specimens are preserved in the Museum of the Western Infirmary, and are thus described in the Catalogue:—

"EXTREME HYDRONEPHROSIS: URETER ENTERING PELVIS AT AN ACUTE ANGLE.—The external outline of the kidney is greatly enlarged, the organ measuring $6\frac{1}{2}$ inches from above downwards. As shown in the preparation the pelvis is greatly dilated, measuring $3\frac{1}{2}$ inches from above downwards, and $2\frac{1}{2}$ inches transversely. It communicates with a series of large compartments which represent greatly dilated calyces, and which, in some places, extend close to the surface, the remaining kidney tissue forming simply a thin rind. The ureter is not dilated, and it enters the pelvis at an acute angle about three-quarters of an inch above the lower extremity of the latter. The pelvis is not elongated towards the ureter; and the orifice, into which a piece of whalebone has been passed, is even smaller than normal. From the position of the ureter the orifice would be valved when the pelvis was full.

"The other kidney was considerably enlarged, weighing $8\frac{1}{2}$ oz.; but otherwise normal (*compensatory hypertrophy*). The patient, a man aged 53, was affected with symptoms of acute rheumatism and pneumonia with pleurisy. There is no note of renal symptoms during life."

"HYDRONEPHROSIS: URETER ENTERING PELVIS AT AN ACUTE ANGLE.—The preparation shows a very large cyst which contained 46 oz. of fluid, and represents greatly dilated pelvis of kidney. The cyst is attached to the lower and anterior aspects of the kidney, the vessels passing to the organ running along its upper border. Towards the kidney there are six large rounded apertures which represent calyces much less dilated than the pelvis, and these apertures communicate with cavities inside the kidney. The uppermost of these cavities is of considerable dimensions, but in the case of all of them there is a considerable amount of kidney substance between them and the surface.

"The ureter, into which a probe has been passed, is found to enter the dilated pelvis near its inferior part at an acute angle, traversing the wall of the cyst for some distance and opening by a slit-like aperture. The ureter is not dilated, and its aperture is not unduly narrow. The other kidney was normal in size, weighing 6 oz. This is noteworthy in connection with the fact that in the affected kidney there was still a considerable amount of kidney tissue remaining, as mentioned above."

The patient was a woman, aged 45, who had suffered from a tumour in the right lumbar region for 12 years.

THE CHLOROFORM QUESTION.

By WILLIAM HUNTLY, M.A., B.Sc., M.D.,
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ALTHOUGH the readers of the *Glasgow Medical Journal* have had this question fully and forcibly placed before them, no one will be prepared to say that the subject has been exhausted. I do not remember ever being so absorbed in any series of articles as those on chloroform, and perhaps this very interest has impelled me to add my contribution to the discussion. My experience, though not extending over so lengthy a period as most of the surgeons who participated in the discussion, has been a notable one; and, when to this is added the fact of having been myself three times anæsthetised by chloroform, my acquaintance with it may be said to be both intimate and singular.

I should like at the outset to express my very great indebtedness to Sir George Macleod. My introduction to chloroform and surgery was under his guidance, and I have had no reason to repent it. From the first I was attracted to this subject. To a student sitting in the benches of the surgical theatre, the view obtained of the various steps of a severe operation is a limited one, and for the most part I was in the habit of watching the administration of the chloroform. The care and attention paid to this part of the subject by Sir George Macleod struck me from the first, and attention was in no way diminished when he lectured on it for three successive mornings. His teachings clinically were most invaluable, as experience has shown, and substantially are identical with the general summing up of the President, Dr. William Macewen. While not quite disposed to homologate altogether the words of Walter C. Smith on another subject—that

“All that was old he held as true,
While all that was new must error be,”—

a good deal of what was put forward as new will require much more investigation and proof before being accepted. Be it remembered here that the work of the Hyderabad Commission was to establish the views held of old by Syme.

While I may be compelled to criticise some of the views advocated, my wish here is rather to add my own clinical observations as bearing on, and as I hope helpful in clearing up, a few of the more doubtful points of the discussion.

In the face of the theory advanced by Dr. Kirk, and from his criticism of other theories, I think that clinical workers are justified in demanding fresh investigations at the hands of laboratory workers. In the light of fresh hypothesis, and in the advance made in a clearer appreciation of the various phenomena of administration, it is natural to expect that the experimentalist would approach any new series of investigations in a broader spirit of interpretation, and be prepared to attach more importance to phenomena which were allowed to escape comment because considered unimportant.

The theory of Dr. Kirk demands consideration. While we may not be prepared to accept his theory of syncope as sufficient to account for many of the deaths, and while the admirable demonstration of Dr. Macewen that many cases of death attributed to chloroform, if properly investigated, would lead us to the conclusion, that in stating the cause of death errors have been made in attributing to chloroform what had a different reason, yet the question has been placed before us.—“Is chloroform on withdrawal followed by a reaction serious enough to be entertained by the administrator as a source of danger?” Is there a reaction—a backward swing of the pendulum; and, if so, what is the extent of the swing in the various stages of narcotism? The theory as laid down by Dr. Kirk is a most fascinating one, and the above query which rises from it is most pertinent. Dr. Macewen, in adverting to it, said that he had never noted any slowing of the circulation in operations. The matter, in regard to its verification in the human subject, is surrounded with a host of difficulties. In a fairly healthy subject a diminution of blood pressure and retardation of the flow will not lend themselves readily, if at all, to ocular demonstration. Occasionally such a state might be noted in a very weak patient, when before operation the tension was weak and the pressure low. Curiously, such a case occurred some four years ago in my presence. A lad of 17 was brought in to the Nussseerabad Hospital to have his limb amputated. He had sustained a compound comminuted fracture of the bones of the leg. His friends had doctored him in native fashion for some time, and, when gangrene set in, had brought him to hospital. I was only a spectator on this occasion, as my work at that time lay in a different station. The state of the limb was most offensive, and Dr. Clark gave them no hope, and was unwilling to operate. However, at the entreaties of the friends, the operation was performed. The main artery was seen and tied, and the tourniquet was first loosened and then taken off altogether;

not a drop of blood was seen nor an artery spouting; no pulsation was seen in the main artery. The lad was not deeply narcotised. The chloroform was then taken off altogether, and gradually, as consciousness came back, a slight flow was observed, and the pressure increased to permit us to see weak pulsations in the main vessel. The lad had almost no pulse before the operation, and although neither fainting nor shock was visible, the effect of the chloroform was as above described. On taking off the towel with chloroform, the boy came easily, though slowly, back to consciousness. The boy died the following day, leaving to me this proof of the action of chloroform on the circulation. I should state here that I do not consider this has any bearing on the question of the action of chloroform directly on the heart; it only illustrates what occurs in the circulation during narcotism.

Dr. Macewen points out that, for want of a proper method of observation, cases are attributed to syncope which in reality are due to asphyxia; and this point is confirmed by Dr. Newman's experiments. According to Dr. Macewen, this asphyxia is due chiefly to accumulated carbonic acid in the blood, though deprivation of oxygen is also hinted at. A fuller consideration of this part of the subject will, I am assured, lead us to adopt the theory of the deprivation or absence of oxygen being the factor in the case.

A reference to Dr. Lauder Brunton's articles on hypnotics and anæsthetics in *The British Medical Journal* of 1888, will show that this is the view now adopted by him. Again, consider how small a proportion of oxygen is asked for and used in the preservation of the æration of the blood. Of the 20 per cent of oxygen in the inspired air, 16 per cent is returned in expiration. Thus, we may put it, that in order that 4 per cent of oxygen be retained and absorbed into the blood, there is in nature an evident necessity that 20 per cent of oxygen be present in the inbreathed air. These are the conditions of ordinary healthy respiration. Now, in chloroform administration there is little or no evident embarrassment in expiration; in spite of the presence of chloroform, the ordinary expiratory impulse is more than sufficient to perform the task asked of it. With inspiration under chloroform the problem is different. An ordinary inspiratory effort will inhale its usual volume of air. In this volume there will be a diminution of the percentage of oxygen in direct proportion to the added volume of chloroform vapour. Stop the breathing suddenly by putting the hand over the mouth and nostrils

and we know how very soon evil consequences arise. Replace the air with an atmosphere of pure chloroform and we have two effects consisting of the want of air plus the direct action of chloroform. Give such an amount of chloroform that the percentage of oxygen is diminished, and the effect will be in the same direction, though varying in degree. The problem here arises—"What is the exact quantity of air which can be withheld from a patient without materially interfering for a length of time with the vital function?" Again, when we administer chloroform, we add another element to the problem. We have the effect of chloroform and the effect of the deprivation of oxygen to deal with. So long as a sufficient amount of oxygen is admitted, the system can withstand the lethal effect of the drug on the nervous centres of the brain. Let the limit be passed, and you have two death-dealing forces operating in concert, with this result, that if the limit be greatly overstepped we can reasonably expect to see what is called by many "sudden death from chloroform," the effect following so rapidly.

In support of this theory of the deprivation of oxygen being the real cause, we may mention the fact that when a sufficient quantity of oxygen is administered, even although the proportion of carbonic acid gas be greatly increased, the symptoms of asphyxia are not observed.

Moreover, the advocates of Jünker's inhaler implicitly confess that for the proper administration of chloroform the quantity of air should be most carefully provided for, and there should be a limit beyond which we should not go. In those instruments we have an attempt to do by calculation what is done intuitively by "skill."

Yet another proof. All who took part in the discussion were unanimous that women in labour were much safer subjects for chloroform, and Dr. H. Cameron drew attention to the fact that the extremes of life were more favourable to safe administration, yet the reason for both of these undoubted facts were not attempted, nor inquired after. Take the case of the pregnant woman. In this case the oxygen inhaled by the woman is intended for the life of two. A portion of the oxygen is carried to and stored up in the placenta, and during the period of gestation there must be in the blood of the mother an excess of oxygen to replace what of oxygen is used up in the placenta. This, in case of necessity, can be turned naturally to the use of the mother, and so in midwifery cases the woman owes her safety in many cases, it may be, more to this store of oxygen than the skill of the practitioner; or, to

put it in another way, by reason of this surplus of oxygen less skill is demanded.

Then turn to the two extremes of life. In those cases we cannot plead the presence of a surplus. Here we would attempt to show that there is a less demand for oxygen than in the adult. This, which will be readily granted for the old, may not be so easily seen in the case of children. In these we have rapid anabolic changes, have formative as well as nutritive demands. A little thought, however, is sufficient to show that, compared with the adult, many organs are undeveloped or dormant. The demands, for example, made by the brain and sexual organs are not present in childhood, and more especially would we contrast the brain of the adult and child. For these reasons there is not the same active peremptory call for oxygen, and the child can thus, within limits, accommodate itself to the modified state of things, for a time at least; it is more tolerant of the change.

In reference to the question of asphyxia generally, apart from any view of its causation, the feelings of the patient, I think, point to this asphyxiating element acting very early in the administration. In cases from drowning, those who have recovered tell of the "ringing of bells" in the ears, which increases in intensity and rapidity the deeper becomes the state. This, as far as my personal experience goes, is precisely what was experienced each time I went under the anæsthetic. Almost immediately after the commencement of inhalation, these ringing sounds made their presence painfully felt. Studying them during the second and third times of being anæsthetised, I found that they have no reference to the pulse or the beating of the blood-vessels in the ear; as the inhalation proceeds the ringing becomes louder, the beats follow each other with great rapidity, till they seem to merge into one long roaring sound, and unconsciousness supervenes. The point to note is the rapidity of onset after a whiff or two, and the similarity between the subjective symptoms of chloroform inhalation and those of drowning.

In attributing asphyxia to the absence of oxygen, and in recognising this as playing a most important part in the administration of chloroform, if the views advocated above commend themselves, it will go far to establishing and connecting, on a rational basis, clinical facts which at first sight seem altogether unconnected. The danger from asphyxia may thus be represented by a curve or wave, the summit or crest of which is represented by adult life (the one great exception being parturient women), the two ends being occupied by the

extremes of life. The recognition of such a state of things cannot but have an effect for good on the mind of every administrator, and as a working hypothesis can only prove helpful towards safe and careful administration.

There are still another set of cases on which light has been thrown by both Dr. H. C. Cameron and Dr. Macewen. The latter has demonstrated that morbid conditions of the brain constitute an element of danger in the administration of anæsthetics. Other states, as shock, fright, and nervous or emotional temperament furnished cases of death and danger in clinical practice. Dr. H. Cameron also propounded the view that certain operations, notably those in connection with the mammæ, have a disturbing effect, even when the patient is under the influence of the drug.

In reading over all the illustrative cases cited by various members during the discussion, one cannot fail to be struck by the fact that certain regions of the body furnish almost all the deaths from chloroform. We read of death and danger accompanying operations on the penis, diagnostic operations on the vagina, operation of vaginal fistula, mammary operations, and quite a notable number of cases of tooth extraction. On the other hand, we rarely (I have never heard of one) hear of deaths occurring in the amputation of fingers (if we except the thumb), toes, hands, arms or limbs. The fact was not fully brought before the meeting, that morbid states (functional or organic) both of the sympathetic and cerebro-spinal system are factors to be recognised as fraught with danger to life during the narcotic state, and moreover, that operations in regions, the nerves of which are what we may call more highly strung, that is, more susceptible to inward states of feeling, and more readily responsive to outward impressions, demand more care and watchfulness from their abnormal liability to set up reflex action.

In reading over Dr. Woodburn's contribution, I was disappointed in finding no attempt made at solving the question of deaths in tooth extraction. Dr. Macewen's cases give us the true clue. The patients who will have an anæsthetic in getting a tooth drawn are one and all of nervous temperament. Again and again have I noticed in nervous patients under chloroform twitchings occurring during the operation while deeply under the influence of the drug. This twitching is most observed at the beginning, and is seen when by all tests the patient is fully under. Professor G. Buchanan's plan of slapping the patient with a wet towel when the safety zone has been passed, is an additional proof that even when deeply

narcotised many patients are susceptible to cutting and slapping impressions on certain portions of the body. The question may be asked, "Granted a morbid condition of brain, will an operation on a limb be either equally, more, or less dangerous to the patient while under chloroform than an operation on the face, breast, or genital organs?" Taking the clinical evidence, every surgeon would agree that greater carefulness is required in administering the anæsthetic when these "nervous" regions are involved. This seems a plain conclusion from the facts, and should be part of the teaching on the subject. We would again know explicitly the points which all along have been implicitly acted on by our best surgeons, and which come under the term "skill required." The regions which are to be regarded as dangerous are those of the face and neck, mamma and genitals, these representing a dangerous element from the richness and character of their nervous supply (*e.g.*, the trigeminal nerve of the face). In those regions, again, where the nervous temperament is pronounced, the danger is greater than in those of a more phlegmatic disposition.

The experiment of the "salt frog" establishes the fact of the direct action of chloroform on nervous tissue, and clinical experience enables us to formulate the law that disordered conditions, whether functional or organic, increase the susceptibility to the drug.

On the above theory, vomiting, as of nervous origin, will be more likely, if there be any want of due care in the preparation, to occur in patients of a nervous temperament. I happen myself to be a painful illustration of this. After being put under chloroform for the first time, I suffered from after sickness and vomiting for more than two days. As an attack of acute erysipelas supervened, I was myself in doubt whether this was not due to the onset of the erysipelas, and was inclined to the belief that it greatly assisted in bringing it on. On the second occasion I took chloroform to get the fangs of a lower molar extracted after the upper part had been broken in a previous vain attempt. A surgeon-major and another military medical doctor were present. I woke up in a fit of vomiting without the stump out. They informed me that my appearance was so alarming that they could not possibly go on, and though urged by me to go on again or come back and finish it next day they refused. As the pain was agonising, I wired for my colleague, Dr. Husband, of Ajmere. He came through on the following day. Just previous to operation I took about $1\frac{1}{2}$ ounce brandy. As I anticipated, the stumps were drawn in safety this time, and there was no sign of sickness or vomiting. Dr. Macewen, though

commending this "Dutch courage," mentioned what he thought to be a generally credited opinion, namely, that the giving of spirits tended to favour vomiting. The experiment with brandy on myself is significant from the fact that having been a total abstainer from birth, the physiological action of the brandy was more likely to be exhibited in full degree. In my case, it both stopped the "alarming" symptoms, whatever they were, and prevented the onset of vomiting; in a word, it exercised a sedative effect on the nerves, and consequently on the pulse and the nervous mechanism of vomiting. On the third occasion, it should be noted that I was much longer under the anæsthetic, and so logically should have had an aggravated tendency to sickness and vomiting.

We have thus tried to bring a second series of cases, differing in many respects mutually, under the one head of abnormal, over-tense, or morbid states of one or other part of the nervous system. The general proposition is, that extraordinary states of the nervous system should be recognised as factors exercising a perturbing influence during the administration of the drug, and that certain regions, from their nervous connection, should be recognised as spheres of greater danger, and so demand greater care. The remedies are clearly laid down and summed up in Dr. Macewen's closing address.

Idiosyncrasy, as exhibited by many patients, can hardly be classified, though if it have any relation with anything, it must be related somehow or other to the nervous system. As ordinarily observed, it is seen as a prompt obedience of the nervous centres to the anæsthetic. It is in such cases as those that I have found great benefit in carrying out the advice of Sir G. Macleod, namely, to put the patients under with my own hands. Such advice is most invaluable when the the helpers you have are not European. A case comes to mind. A man was brought into my hospital with strangulated hernia (inguinal). He was in a very exhausted state from the fatigue of the distance he had been brought added on to the vomiting, pain, and other accompaniments of the disease. I administered the anæsthetic. The man counted slowly up to twelve and then stopped counting, when to my surprise, I found him fully narcotised. The operation was gone through, a whiff of chloroform every fourth or fifth inspiration being sufficient to keep up the state. These were the directions to my assistant, and they were found efficient. I have not the slightest doubt that had my assistant from the onset administered the anæsthetic, having never heard of or seen a patient going under so quickly, he would have kept on the towel and I would have been

credited with my first death from chloroform, which would likely have been put down to syncope arising from or precipitated by the exhaustion of the patient. I was somewhat sceptical of this idiosyncrasy until twelve days later, when I had to make a small opening in the scrotum to evacuate pus that had formed in the space previously occupied by the hernial sac which had been dissected out; the patient asked for chloroform. Anxious to test again the presence or absence of idiosyncrasy, now that the patient was rapidly recovering, the drug was again administered, and precisely the same susceptibility showed itself. This case is sufficient to show incontestably that true idiosyncrasy exists apart from, and unaffected by, the disease. We have here to remember that in certain diseased conditions we may be compelled to deal with true idiosyncrasy plus a factor of danger arising from the nature of the case.

In the case of a surgeon having the duties of teacher, when he thus himself puts the patient under chloroform, he, recognising variations from the normal as quickly as they arise, can thus more forcibly and repeatedly illustrate and explain the subject of chloroform to his pupils. Much that is included in the general term "skill" can in this manner be imparted to his class. Such practice teaching is all the more valuable and needful, when up to the present there is a lack of consensus of opinion in the theory.

When the advocates of both "respiration" and "cardiac" theories are almost unanimous about the remedies to be employed, it might seem convenient to let the theories alone. The general opinion, I think, of the Glasgow discussion was in favour of compromise. If anything is clear it is this, that the supporters of the "cardiac" theory have the majority of clinical evidence against them. Granted that chloroform acts directly on the heart, as well as on the lungs and nervous system, we have a difficulty to face. We have established the proposition that morbid conditions of the nervous system introduce an element of danger into the administration, while it is also clearly proved that organic diseases of the heart have no dangerous effect. Chloroform is shown to "calm the heart" organically diseased, when theoretically we would predict the contrary. Cardiac diseases, according to clinical reports, import an element of safety into the giving of chloroform. Naturally, we should expect this element of safety to be more pronounced in the sound heart, but experimentalists rather emphasise the heart risk. The reason of the safety accompanying administration in cardiac diseases lies, I think,

in this. The surgeon finds out the presence of the lesion. He instantly sees in it a reason for greater caution, as careful preparation as possible, and well watched administration. In a word, all his resources are drawn out, all his "skill" brought into action. As the result, the patient passes safely through the ordeal. Now and again, in healthy persons with sound heart, the doctor is not on the *qui vive*, temperament or idiosyncrasy may be present, the same "skill" is not brought to bear, a fatal result follows, and the verdict is "the heart." Some draw their conclusions from observing the pulse. Yet here again medical men may differ very widely in interpreting the pulse. Two years ago, I was asked by a military surgeon to consult with him on a midwifery case in his hands. He had been most of the night with his patient, who was in labour, and on my going called my attention to the pulse, which he held to indicate the near approach of collapse in his opinion; before my arrival he had tried, though unsuccessfully, to apply instruments. On examining both patient and pulse, my opinion was that the pulse was good, the presentation normal, and as the lady was over thirty, he might probably have an hour or two longer to wait, and I accordingly decided against instruments. He wished to go on with perforation of cranium, &c., and immediate delivery. The babe was born in due time, and both mother and child were preserved. Here the preservation of a life depended on the interpretation of the condition of the pulse.

In addition to trained anæsthetists, we would require trained pulse observers, and if during administration the pulse observer differed from the anæsthetist, the operator could not fail to be disconcerted and confused. With the help that has been gained through the Hyderabad Commission, and the summary of the President of the Glasgow Commission on the subject, surgeons are thoroughly justified in bestowing their whole attention to the breathing. In a letter lately received from Surgeon-Major Lawrie on this question, I am informed that experiments are still being conducted to establish and strengthen the links in the chain of evidence in favour of the conclusions of the Commission, and after reading the Glasgow discussion, surgeons have a right to call for further experimental investigation; nor should surgeons, I think, accept unmodified conclusions drawn from frogs with semi-ærated, oval-nucleated-corpuscle blood, ribless chests, and simple bifurcated pulmonic sacs. Frog experiments, in the manner described by Professor Coats, Dr. Newman, or Dr. M'Gregor Robertson, one and all beg the question. No one denies that

chloroform will act directly on an isolated heart, and only in Dr. Newman's experiments was the administration carried on through the medium of the pulmonic sacs. What Dr. Newman showed was, that the action of the heart was affected by every breath we draw, and that the effect is produced so rapidly as to justify the use of the term "synchronous" to denote this. The case has yet to be proved that the heart is fatally affected before and without involvement of the lungs. While thus the case for fresh investigation is a strong one, it may also be said that surgeons themselves have not done all they can to clear up the question. In this regard, I wish to suggest the drawing up of a chloroform chart on the lines of the diagnostic charts already in use in our hospitals. Such a chart would include reference to the following points:—

1. Name, age, sex, disease.
2. Temperament.
3. Coincident presence of—
 - (a) Pulmonic disease.
 - (b) Cardiac „
 - (c) Nervous „
4. Time occupied in being fully narcotised.
5. Breathing.
 - (a) Normal.
 - (b) Abnormal in
 - (1) rhythm.
 - (2) pause.
 - (3) gasping.
 - (4) depth, &c.
6. Dangerous symptoms—
 - (a) In first stage.
 - (b) In later stages.
7. Vomiting—
 - (a) Early.
 - (b) Late.
8. After effects.

A chart drawn up on lines similar to the above should prove invaluable from every consideration.

There seems in the minds of many surgeons an inclination to consider chloroform a drug which, in spite of all we can do, will kill suddenly and mysteriously. In this connection we would do well to remember that the same opinion was held in former times concerning many diseases and processes which have yielded to persistent effort and observation, and there is no reason why every mystery about chloroform should not in like manner be cleared up and scientifically explained.

CASES TREATED BY KOCH'S METHOD IN THE
VICTORIA INFIRMARY, GLASGOW.

By ALEX. NAPIER, M.D.,

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Anderson's College Medical School.

THE first four cases here described were brought before the Glasgow Medico-Chirurgical Society, on 13th March, 1891. In showing them Dr. Napier purposely omitted all reference to such matters as the composition of Koch's fluid, its effects, theories of its action, &c., subjects which have become abundantly familiar through a copious journalistic literature during the past few months. He directed special attention to the fact, however, that in all his cases Tuberculin was the only remedy employed, the regularity, comfort, and cleanliness of infirmary surroundings, which count for so much in many hospital cases, having probably less than their usual influence on the progress of these patients, most of whom were of a social grade somewhat superior to that of the usual hospital patient, many indeed having entered the Infirmary for the sole purpose of undergoing Koch's treatment. Two typical charts are included in these histories, and a third showing the range of temperature in Case X, in which the symptoms developed were such as to forbid continuance of the treatment.

CASE I. *Phthisis Pulmonalis*.—W. O., aged 20, an analytical chemist, was admitted to the Victoria Infirmary, said to be suffering from phthisis, and for the purpose of having Koch's treatment employed. He is a ruddy-complexioned lad, in fairly good condition, and complains chiefly of cough, with muco-purulent expectoration. He had enteric fever at the age of 9. In July, 1889, he suffered from "inflammation of the kidneys," and in the spring of 1890 from influenza ; in the latter illness he had pain over the whole body, cold in the head, but no cough. In May, 1890, he caught a chill, and this was followed by the usual signs of a bad cold—cough, hoarseness, sore throat, and ultimately by moderately free hæmoptysis ; then came copious nocturnal perspirations, emaciation, and catching pain in upper part of left side of chest. Family history on his father's side is bad : an aunt and several cousins died of consumption, and an uncle suffered

from blood-spitting and died of meningitis. The sputum was found to contain numerous tubercular bacilli.

Physical Examination.—Patient is well-nourished, and weighs 9 st. 9½ lb. In left front: flattening under clavicle, and restriction of movement in same area; comparative dulness to percussion; R.M. feeble and accompanied by râles, some plainly friction râles, others crepitant; V.F. diminished; V.R. not diminished. At a point just above and to outside of left nipple, exquisitely tubular breathing, with a few fine râles. In upper half of left back, precisely similar signs detected. Nothing abnormal detected on right side. Heart, liver, spleen, and kidneys normal.

This patient was treated by Koch's method, 22 injections in all having been given, the dose starting with '001, and ending with '04. The treatment lasted from 7th December to 24th February—11 weeks. He never reacted to any marked extent, his highest temperature having been 101·6° F.

In connection with the early reactions two points are noticeable—physical signs appeared on right side, where they were formerly not detected, copious râles being heard with inspiration at right apex, with striking prolongation of expiration. These signs were noticed after the fourth injection, and they gradually diminished and ultimately disappeared as the treatment went on. Then after several injections the patient suffered from an uncontrollable lateral oscillation of the head on raising it from the pillow, this coming on in short attacks, lasting for several seconds, and followed by pain passing from the head down the back of the neck.

On 2nd January, 1891, it is noted that the dulness in left front is less marked, and that the râles are fewer, smaller, and limited chiefly to an area just above left nipple; corresponding improvement posteriorly.

Patient was dismissed on 24th February, feeling perfectly well, and weighing 10 st. 6 lb., having gained 10½ lb. in weight during treatment. His expectoration had diminished in quantity; it became more and more mucous in character, and eventually ceased, while cough also disappeared. Such expectoration as could be obtained contained no bacilli.

Physical Examination at End of Treatment.—Expansion and percussion note equal on both sides; R.M. slightly feebler, and expiration still a little tubular and prolonged at extreme left apex, where also a very few fine râles are heard with inspiration. V.R. and V.F. equal. Posteriorly, both sides equal and normal.

Remarks.—In this case it may be said that a fairly good

recovery took place under the treatment pursued. The disease was limited in distribution, not by any means far advanced, and was running a course marked by very little fever. The patient's general condition had been undeniably improving before he came under treatment, as evidenced by a slight increase in weight, though we can say nothing as to improvement or otherwise in the state of the lung. [20th April.—Patient examined again. Physical signs: anteriorly and posteriorly, percussion note normal; R.M. at left apex slightly feebler than at right, and accompanied by a very few indeterminate râles which disappear on forced inspiration, and do not return; V.R. and V.F. equal and normal. Posteriorly no difference detectable in R.M. of right and left sides. Patient's weight is maintained, though he has developed a small *fistula in ano* since leaving the Infirmary. Almost no cough or expectoration. Sputum repeatedly examined and no bacilli found in it.]

CASE II. *Phthisis Pulmonalis*.—J. S., æt. 40, spirit dealer, admitted to Victoria Infirmary on 2nd January, 1891, complaining of cough, expectoration, and shortness of breath. He had small-pox at the age of 8, and "fever and ague" 12 years ago. Thirteen months ago he caught cold, from which he has not been able to free himself; at first he was hoarse, coughed much in the morning, and had moderately copious expectoration. The cough disappeared in summer, but returned at the beginning of last winter, and became worse as winter advanced. He perspired freely at night. Weight at onset of illness, 11 st. 12 lb. Some time before admission he had improved in condition, weighing then 13 st. 5 lb. Sputum at first was frothy; latterly, muco-purulent. Several small hæmoptyses took place, and on one occasion an ounce of blood was spat up.

Two brothers and a sister died of consumption, and mother died of "bronchitis."

Physical Examination.—The patient is stout, with a thick layer of subcutaneous fat. No clubbing of fingers or incurvation of nails.

In front: at right apex decided flattening, and restriction of movement in respiration. Percussion note on right clavicle markedly dull, and under clavicle comparatively dull. In entire upper half of right front R.M. feebler than on left, expiration prolonged, inspiration full of fine crepitant râles; V.R. and V.F. increased; at a point in third interspace R.M. is tubular, expiration prolonged, and no râles are heard. Posteriorly: percussion note at both extreme apices dull, elsewhere

not altered. On right, R.M. universally feebler than on left; in entire upper half of right side, numerous fine crepitant râles, and at extreme apex prolonged expiration; V.R. and V.F. increased on right. At left apex many fine crepitant râles are heard. Nothing cardiac detected. Sputum contained a few tubercular bacilli. Patient's temperatures during two days before treatment was begun were normal.

This patient had in all 19 injections between 4th January and 20th March, the dose beginning with .001 and ending with .05. Reaction was never very marked, even with the last mentioned dose, the highest temperature recorded being 100.5° F.

On 21st January considerable improvement in the physical signs was noted, the chief points of difference being, that posteriorly there was marked diminution in the râles, especially at left apex, and generally also over right back; anteriorly on right side, percussion note on clavicle less dull, R.M. fuller, crepitant râles fewer. Cough and expectoration diminished.

Further improvement exactly similar in kind noted on 3rd February.

Patient dismissed on 20th February, very much improved, having gained 16 lb. in weight in the Infirmary. No cough. No expectoration. [A little expectoration, obtained some weeks after patient left the house, contained no bacilli.]

Physical Examination at Date of Dismission.—Posteriorly: percussion sounds all normal; crepitation at left apex gone, and over right side and apex so scanty as to be scarcely audible; V.R. and V.F. still somewhat increased on right front; left side absolutely normal, except for a very few crepitant râles at extreme apex. On right, percussion note has much improved; on clavicle it is quite as resonant as over left, and over remainder of right front no difference between it and left detectable. R.M. still slightly feebler on right, and accompanied by a very few fine râles. [According to latest advices patient's improvement continues. On 15th April he writes that he is well, and that his weight keeps up. Sputum sent then contained no bacilli.]

CASE III. *Lupus.*—A. B., æt. 21, a draughtsman, admitted on 23rd December, 1890, to Victoria Infirmary, suffering from *lupus vulgaris exedens et non-exedens* of right ala and tip of nose. Patient's family history is unimportant, except that one brother died of Potts' disease of the vertebræ. He himself suffers from stenosis of both lachrymal canals and dacryocystitis, much improved in hospital by passing probe. He had scarlet fever

at the age of 8, and measles at 10; an abscess of left side of jaw five years ago. Present affection began six months ago with a small pimple on right ala of nostril; this broke down and ulcerated, and gradually extended to tip of nose. Treatment by caustics had failed.

On admission patient was found to have a somewhat strumous aspect. The point of nose and a portion of right ala were wanting, the surface there being red, raw, and granulating.

Nothing pulmonary detected; faint V.S. murmur at apex of heart.

This patient received in all 18 injections, between 24th December, 1890, and 9th March, 1891; dose to start with, '005; last dose, '05. Reaction at first very severe, both locally and generally (see chart). When the temperature was high he had a very irritating cough, and the febrile movement was followed by severe general aching.

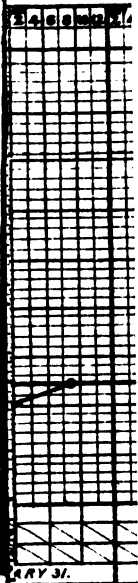
Marked improvement set in early in the course of the treatment, and the patient was dismissed with the parts soundly cicatrised. [20th April.—This patient shows himself again to-day with distinct evidence of relapse in parts formerly regarded as cicatrised, with two new nodules further up nose. He is advised to enter house again for treatment by scraping or caustics.]

CASE IV. *Lupus*.—E. F., a girl aged 17, was admitted to Ward II of Victoria Infirmary, suffering from lupus of ten years' duration. The disease appeared first, when patient was 7 years of age, over glands on left side of neck, and spread thence over face and other parts. The distribution of the eruption is indicated in the accompanying figures. The patches are, for the most part, of the non-ulcerated type, except at upper part of sternum and on face. The cartilages of the nose, and a considerable part of the septum, have disappeared, and here and on both cheeks and chin are numerous ulcerating patches covered with thick brownish scabs and set in reddish lupous and cicatricial tissue. On the limbs the patches are large, with subcutaneous cicatrisation in the centre, and a margin of dry, scaly, non-ulcerating lupous nodules.

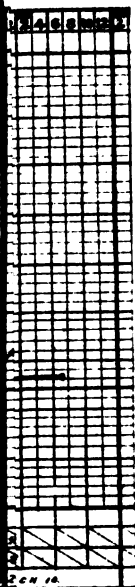
The treatment lasted from 9th December, 1890, till 9th March, 1891, 20 injections having been given, ranging from '006 to start with, and ending with '02.

Reaction was of the usual kind, but very severe, both generally and locally, patient being apparently very susceptible to the action of the lymph. There was the usual

Temperature (Celsius)



Temperature (Fahrenheit)



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Y-axis: Miles per hour (0 to 12)
X-axis: Time (0 to 12)

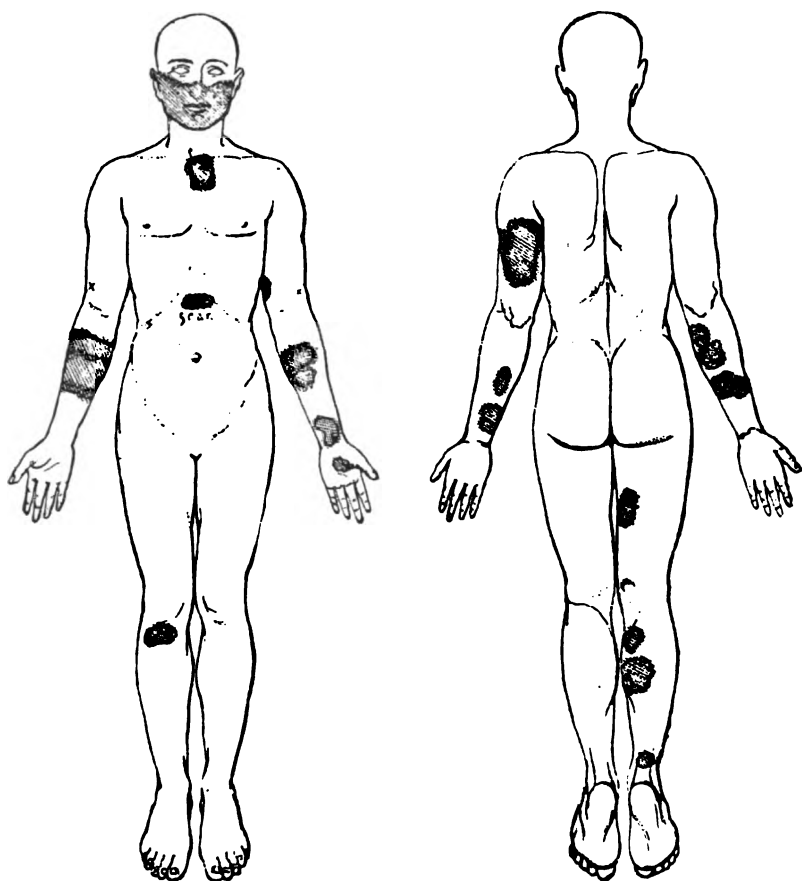
Approximate data points from the graph:

Time (hours)	Miles per hour
0.5	11.5
1.0	8.5
1.5	5.5
2.0	5.5
2.5	6.5
3.0	6.5
3.5	5.5
4.0	5.5
4.5	5.5
5.0	5.5
5.5	5.5
6.0	5.5
6.5	5.5
7.0	5.5
7.5	5.5
8.0	5.5
8.5	5.5
9.0	5.5
9.5	5.5
10.0	5.5
10.5	5.5
11.0	5.5
11.5	6.5

Marian Hill investigation



broad belt of erythema round the patches, and from these sound surrounding parts there was afterwards free desquamation; the patches themselves were much swollen, especially on face, and the ulcerated parts became covered with yellowish crusts. After the first injection appeared a most copious rash, exactly resembling that of scarlet fever; after the third a rash resembling that of measles.



On 16th December, after only two injections, very marked improvement is noted: in the ulcerated patches a few small yellowish sloughs are seen in process of detachment; when these and the secretions are wiped away there is seen in all these patches an active and rapidly advancing healing line,

giving the parts the characteristic appearance of healthy and healing ulcers. The non-ulcerated parts, especially on limbs, have become much paler, and the ring of active lupous nodules has sunk to a very marked extent below the level of the skin, the nodules having evidently undergone involution.

After three months' treatment this patient was sent home for a time not quite cured, but certainly very much improved. About six weeks before leaving the Infirmary many of the parts, especially on the face, began to appear redder again, though they never showed any activity at all comparable to that noted on admission. Another noteworthy fact is this—that while treatment was going on, about the middle of February, a small nodule appeared under the skin of outer side of left arm, just above elbow-joint, at the point marked on the figure; in a few days this became larger and reddened perceptibly. It was situated in the deeper layer of the true skin, but moved freely over the muscular structures. As the patient stated that this was precisely the way in which all her patches had appeared, the nodule was excised after subcutaneous injection of cocaine. The wound healed rapidly and left a sound and healthy scar. About a week later another nodule appeared at an almost exactly symmetrical point on right arm. This was dealt with in the same way. [20th April.—Patient showed herself to-day. General appearance still much better than when treatment was begun, but not so well as when dismissed; and three new nodules, undoubtedly lupous in character, have appeared.]

Besides the foregoing cases shown at the Medico-Chirurgical Society, the following is a summary of certain other cases in which Koch's treatment was pursued, with indifferent results:—

CASE V. *Sub-acute Phthisis*.—Mrs. B., aged 46, was admitted into Ward II, Victoria Infirmary, on 7th December, 1890, suffering from sub-acute phthisis of 7 months' duration. The left apex was the part chiefly involved.

Patient's ailment began with a cold caught in May, 1890, the symptoms at first being cough, expectoration which soon became purulent, slight nocturnal perspirations, gradually increasing debility, but no marked emaciation. No very marked physical signs, excepting an occasional click with inspiration at left apex in front, and a suspicion of dulness of percussion-note at a corresponding level behind, were detectable till about middle of November. Copious hæmoptysis occurred daily from 17th till 24th November, 4 to 6 ounces being brought up

each day. With this the whole left back suddenly became quite dull to percussion, R.M. diminished in volume and filled with abundant moist râles; in front, subclavicular dulness and a few râles were detected. After 24th November the sputum was blood-stained only, the râles posteriorly became fewer, and at the apex the signs were suggestive of cavity. Professor Gairdner, who saw the patient at this time along with Dr. J. K. Love, of Strathbungo, her regular attendant, thought the case a suitable one for Koch's treatment.

The patient's mother had died from bleeding from the lungs, cause unknown; a cousin died of consumption. Temperature during latter part of illness had run very high, sometimes reaching 104° F., and was brought down only by antipyretics.

Physical Examination on Admission.—Patient not emaciated. At left apex in front slight flattening of chest wall and restriction of movement; percussion-note certainly not dull, but rather more resonant than at right apex, at which latter situation the note is higher in pitch; R.M. feebler than on right, expiration prolonged and accompanied by a few clicking râles; V.R. slightly bronchophonic, but feebler than at right apex. Back—percussion-note almost absolutely dull from apex to mid-scapula; R.M. tubular in quality and filled with abundant fine râles; expiration prolonged; V.R. and V.F. increased.

This patient was under treatment three weeks only; she had nine injections, beginning with .001 and ending with .007. Reaction was invariably sharp, the temperature rising very considerably with each injection; but on the days when no injection was given the temperature was always lower, by several degrees, than for some time before admission, and the patient's general feeling and appearance were much improved. She had a slight hæmoptysis after the last injection, and, being tired of Infirmary life, was sent home at her own urgent request, certainly much improved generally.

Physical Signs on Dismission.—Percussion-sound over entire left back decidedly less dull, R.M. louder, râles fewer; V.R. increased and V.F. decreased as compared with right side. At extreme left apex posteriorly R.M. and râles cavernous, V.R. acutely pectoriloquous. In front, râles less numerous. After returning home this patient had repeated copious hæmorrhages, her debility steadily increased, and she died in about six weeks.

CASE VI. *Phthisis Pulmonalis*.—T. M., aged 24, a clerk, admitted to Victoria Infirmary on 6th January, 1891, com-

plaining of cough and expectoration; dismissed on 18th February, with no substantial alteration of condition, except a gain of 2 lb. in weight.

Four years ago, as the result of a cold, he suffered from undoubted phthisis pulmonalis, involving right apex; his symptoms at that time were emaciation, debility, cough, scanty expectoration; physical signs included restricted movement at right apex, dull percussion-note, tubular R.M., prolonged expiration, fine crepitation on inspiration. Under a course of repeated small blisters, tonics and cod-liver oil, and change of air, he completely recovered in a few months, the physical signs above noted also disappearing. There was no phthisical taint discoverable in family history; father died of cirrhosis of liver, mother of epilepsy.

Patient remained well till June, 1889, when he again caught cold, cough and expectoration returning. About beginning of 1890, cough became very troublesome, expectoration copious and muco-purulent; failure of appetite, emaciation, and night sweating also were complained of. In June, 1890, slight hæmoptysis.

Present Condition.—Marked emaciation, clubbing of fingers; consolidation of entire right lung, with innumerable points of softening; large cavity at right apex; greater part of lower lobe posteriorly transformed into one large cavity; consolidation and softening at left apex. Bacilli in sputum. Treatment lasted six weeks, during which time fifteen injections were given, ranging from '001 to '015. Reaction was not usually very marked, temperature only once rising to 102° F.

Dismissed practically *in statu quo*.

CASE VII. *Phthisis Pulmonalis*.—W. W., aged 21, fireman, admitted to Victoria Infirmary on 27th January, 1891, complaining of cough and debility. In family history only trace of phthisical taint is the statement that his father died of "disease of the bronchial tubes and ulceration of the wind-pipe."

Illness of six months' duration, marked by frequent large hæmoptyses, troublesome hacking cough, muco-purulent expectoration, night sweats, emaciation, progressive debility, failure of appetite, diarrhoea. Patient is anæmic in appearance, and has clubbing of fingers. Consolidation at right apex, anteriorly and posteriorly; lungs elsewhere normal. Treatment began on 30th January, and continued till 6th March; dose of fluid '001 to '005. Reaction always well marked. Treatment suspended, as it seemed to aggravate

tendency to diarrhoea, while the physical signs became worse, indicating commencing and continuing softening.

CASE VIII. *Phthisis Pulmonalis*.—J. M'L., aged 25, suffering from phthisis pulmonalis of three years' duration. The disease involved both lungs, but was more advanced in left. Patient was much emaciated, and had suffered from repeated hæmoptyses, perspiration, cough, and copious expectoration, and progressive debility. Bacilli found in sputum. Fever of moderate intensity. Treatment lasted from 26th December, 1890, till 3rd February, 1891, fifteen doses of tuberculin in all having been given, ranging from '001 to '02. Reaction was invariably well marked, and of the usual type. Patient was dismissed on 6th February, certainly not in any respect improved.

CASE IX. *Tubercular Disease of Ankle*.—Robert C., aged 12. Had suffered for one year from tubercular disease of left ankle. In May last the joint was excised, and in July, August, September, and November the sinuses left had to be scraped. Before injection some of the sinuses were still unhealed and discharging. On 7th December, 0'005 of the fluid was injected, half the adult surgical dose. Reaction was severe, ushered in by headache, rigor, and vomiting, temperature rising to nearly 102° F. The ankle-joint swelled, the parts becoming red and very tender, the swelling extending round the heel. Reaction over and temperature normal in thirty-six hours. Injected again 0'006 on 12th December. Reaction more severe than formerly, so far as general symptoms are concerned, temperature rising to nearly 104° F., but less severe locally; reaction shorter, and over in about twenty-four hours. Reaction also occurred more speedily on second injection. Total number of injections, five within about six weeks; highest dose, '006. Reaction always very severe. Result *nil*. The joint may possibly have measured rather less in girth after treatment was over, but at least one sinus remained unhealed, and would probably have to be dealt with surgically.

CASE X. *Tubercular Disease of Knee*.—Rebecca C., aged 14. Tubercular disease of left knee of two years' duration. Case had been treated by rest and splints with fair success; pain had gone, the patient could walk freely, but there remained some swelling over inner aspect of joint. To test whether this was a tubercular swelling, two injections were given, both of '006.

Reaction was very marked, both locally and generally, the joint increasing in girth by half an inch, and becoming red and painful to touch and on movement; after reaction, knee less in girth than before injection. Only two injections were given in this case, as the second produced such a serious degree of disturbance as seemed for several hours to threaten life. This was the only case in which any anxiety had been caused by the injections. The alarming symptoms were the following:—High temperature (see chart), suffusion of eyes, swelling and puffiness, and ultimately marked duskiness of face, extreme breathlessness, acute pain across lower part of chest, in line of diaphragm; copious râles at right base; pulse small, compressible, and so rapid as to be quite uncountable; faintness and sickness on raising head from pillow. Symptoms overcome by stimulation. This alarming condition seemed to be due to heart failure; indeed, the fluid may be regarded as a powerful cardiac depressant, lessening the force of the heart's action, though not its frequency.

CASE XI. *Lupus Verrucosus*.—R. T., aged 40, lupus verrucosus of one year's standing, and involving anterior aspects of both legs. This case was noteworthy from the negative point of view, as the man had not reacted even after two full surgical injections (.01 of original fluid). This raised the question whether it was a case of lupus at all; the view that it was syphilitic was negatived by the absence of history or concomitant signs of that disease. Professor M'Call Anderson, who saw the case, agreed in the diagnosis of lupus verrucosus. The absence of reaction seemed to suggest that the disease known by that name is not a true lupus—that is, is not due to the presence of the tubercle bacillus in the skin.

CASE XII. *Addison's Disease*.—W. C., aged 46, a butcher, admitted to Victoria Infirmary on 11th December, 1890, evidently hopelessly ill, and suffering from well marked Addison's disease. He died on 15th January, 1891, after five weeks' residence in the house. His illness had lasted two years, and was marked at first by extreme dyspepsia, pain in epigastrium, and vomiting after food. Then came steady and progressive emaciation and loss of strength, and striking colour changes in the skin, the pigmentation being deepest on abdomen, back, outer side of thighs, axillæ, scrotum, penis, and nipples; conjunctivæ clear; no staining of buccal mucous membrane. Heart sounds extremely feeble; no murmur; no apex beat discoverable. Tenderness on deep

pressure in loins, especially on right side. Tumour discovered under right costal arch, in situation of right kidney. In the treatment of this case, it was suggested that, as Addison's disease is so often tubercular, and as this patient presented suggestive signs—emaciation, hectic temperatures, night sweats, and diarrhoea—we might be justified in giving tuberculin a trial. Six doses in all were given, beginning with '001 and ending with '005. No reaction was obtained, and the treatment was abandoned. At the *post-mortem* examination nothing tubercular was found; but the right supra-renal capsule was much enlarged, and apparently transformed into a hæmorrhagic cyst, its contents being firm in consistence, dark reddish-brown in colour, and having the appearance of laminated fibrinous clot.

CASE XIII. *Lupus Exedens et Non-exedens*.—A lady, aged 44, under treatment for about two months. Seven or eight injections in all were given, ranging from '001 to '01. Marked reaction even with the initial dose. Treatment suspended, as eruption became steadily worse. The affection involved specially tip and right ala of nose, and mucous membrane for some distance into right nostril. Ulceration extended, and numerous new nodules appeared.

CASE XIV. *Phthisis Pulmonalis*.—A lady, aged about 35, suffering from phthisis involving the right apex. Disease of about eighteen months' duration, and advancing slowly. Patient is still under treatment; she reacts readily, and is receiving at present doses of '03. No perceptible effect, at the end now of about two months' treatment, is detectable, physical signs and patient's general condition being quite unaltered.

CASE XV. *Lupus Non-exedens*.—Patient, a man, aged 31, suffering from numerous patches of non-ulcerating lupus on face. Treatment by caustics had failed to effect any permanent improvement. Patient still under treatment. Four injections have been given ('005 to '01). Marked reaction occurred. *Reaction delayed for 36 hours* after two first injections. Already most marked improvement is noticeable, patches being much paler and somewhat sunk below general level of skin, involution obviously taking place.

Remarks.—In presenting some estimate of the value of Koch's tuberculin in disease, it must be admitted at the

outset that this mode of treatment has proved somewhat disappointing. Possibly too much was expected of it; certainly its range of usefulness is much more limited than was at first believed. In phthisis pulmonalis its efficacy seems doubtful, save perhaps in cases in which there is little fever, nothing rapid or acute in the march of the affection, where the disease is limited in distribution and at an early stage in its progress—precisely those cases, in fact, in which ordinary treatment is often quite successful. In lupus the results are less open to question, though even here actual recovery is rarer, and manifest improvement is seldomer obtained than is stated by some authorities; relapses seem to be common. There is, nevertheless, probably a wider field of application for the remedy in such cases than in phthisis. The immediate effects of tuberculin are constant enough, though it sometimes fails to induce any "reaction" in cases which are plainly tubercular; it is not absolutely reliable, therefore, even as a test for tubercle. Some of the phenomena of the "reaction" can be seen in the charts: the primary fall in temperature, then the rise, and again the secondary rise, the earlier occurrence of "reaction" on repetition of injection and its shorter duration, the diminished effect obtained from repeating the same dose, and, above all, the very striking tolerance which is so rapidly established for this remedy. Tickling, irritating cough was repeatedly noticed during "reaction"; measles and scarlatiniform rashes were both noticed; pain, often rather severe, across the chest, was commonly complained of; while headache and general aching, probably the effects of the elevation of temperature, were frequently mentioned. On two occasions, in one case, reaction was delayed till thirty-six hours after injection. Finally, it seems clear that in tuberculin we have an agent of undoubted power, either for good or evil, and one that has to be very cautiously handled. If it is perhaps of less service than was at first believed, it is no less certain that it has a field of applicability, particularly in lupus. It is worthy of further careful trial, and should not be condemned in the hasty, precipitate fashion which has become popular in many quarters.

ADDENDUM.

The question of dose of tuberculin is one of the difficulties in the way of using it effectively. If it is used freely and in rapidly increasing doses, as Koch at first taught and

practised, certainly abundance of "reaction" is obtained, but risk is run of setting up symptoms of such severity and acuteness as to endanger the life of the patient. On the other hand, the fact that tuberculin is irregular in action, that sometimes even extremely minute doses have given very marked and even dangerous effects, has led many to employ it more cautiously than Koch indicated, and in much smaller doses. That this difficulty is felt in Berlin, where the remedy has been most extensively tried, will be seen from the following note on the dosage of tuberculin in the treatment of pulmonary and laryngeal tuberculosis, communicated to the *Deutsche Med. Wochenschrift*, 1891, No. 10, by Dr. Paul Guttman and Professor Paul Ehrlich:—

"The treatment of pulmonary tuberculosis with Koch's remedy has hitherto been begun with 1 mg., with which dose the febrile reaction has often been greater and more prolonged than was desirable; indeed, in one case under our observation, a fever of considerable duration set in after a single injection of that amount. We have therefore now, during the past few weeks, tried another mode of beginning the treatment in more than thirty cases; the initial dose is $\frac{1}{10}$ mg., the injection is given daily and increased by $\frac{1}{10}$ mg. on each occasion till at the end of ten days a dose of 1 mg. is reached. Occasionally a day is allowed to pass without injection. Then the injection is administered every second day, the dose being increased by $\frac{2}{10}$ mg., and when doses of 2 or 3 mg. are reached the increase at each injection should be $\frac{5}{10}$ mg. The later additions to the dose should be regulated by the practice hitherto in use. The aims of this mode of administration at the outset of the treatment are:—

"1. To test the sensibility of the patient to the remedy. There are patients who have febrile reaction of some intensity and duration after only a few of these small doses, some even after doses of $\frac{1}{10}$ and $\frac{2}{10}$ mg. In the latter cases there was previously reason to doubt, on purely clinical grounds, whether such cases were at all suited for Koch's treatment. We therefore regard hypersensibility of the patient, shown in reaction to these minimal doses, as a contra-indication to the continuation of the treatment.

"2. By this means the diseased organism is accustomed gradually to the remedy, and too intense febrile reaction is avoided.

"This plan gives surprising evidence of the activity of Koch's fluid, as, according to our experience, even after injection of $\frac{1}{10}$ to $\frac{2}{10}$ mg. marked local reaction occurs in tuberculosis of the

larynx, and sometimes also in other tuberculous nodules, glands, &c.

"In the majority of cases treated in this way no febrile reaction occurred, or only here and there on several days a rise of a few tenths of a degree (C.) in temperature. The patients were free from any unpleasant symptoms. In a few cases fever occurred of varying intensity, but only exceptionally rising to 39° C., before the dose of 1 mg. was reached, and in three cases it took the form of either a typical short febrile wave, or a somewhat more protracted febrile movement, lasting two to three days. The further treatment in these two groups of cases was different. In the first, in which the fever was of short duration, the last dose which excited febrile reaction was repeated every second day till reaction was no longer obtained, and the dose was increased in the manner described above. In the second group, in which the fever was more prolonged, we waited till reaction had completely subsided, and then injected a much smaller dose, sometimes the initial dose of $\frac{1}{16}$ mg., and increasing the dose more slowly than before, either by repeating the smallest dose more frequently or by injecting every other day. Prognostically we regard the second group of cases as less favourable than the first.

"A 1 to 1000 solution is used, made fresh every day shortly before administration, as a solution so weak is apt to diminish rapidly in strength.

"In conclusion, we have to state that we have had under treatment more than 30 patients, including a number of laryngeal cases, without having met with a single unpleasant symptom either subjective or objective. We believe that this cautious mode of proceeding is peculiarly well adapted for private practice, where such continuous supervision as is obtainable in hospital is impossible."

CASE OF OSTEOMYELITIS OF THE SHAFT OF THE FEMUR.*

By WILLIAM F. GIBB, M.D., PAISLEY.

J. D., aged 15, was admitted from a Reformatory to Paisley Infirmary on 23rd December, 1890, suffering from pain in left knee, which had been previously regarded as rheumatic. He was a rather thin lad, but was stated to have been active and

* Read at the Glasgow Medico-Chirurgical Society, 20th March, 1891.

fond of sports, and there was a history of his having received repeated injuries to the left knee from kicks at football. No evidence of tendency to tubercular disease either from family history or from the history of patient's own health previously. The left knee was swollen, tender, and fluctuant, and the thigh immediately above also somewhat swollen. Right knee slightly swollen and tender. A little rhonchus at base of chest, but no dulness. A trace of albumen in urine. Patient was delirious, and the temperature 102.6° F. Had been confined to bed for about a week before admission on account of the condition of left knee. Ordered 10 grains salicin every two hours.

24th December.—Still delirious; evening temperature 99.6° .

25th December.—No improvement; temperature 102° .

26th December.—Transferred to surgical ward; temperature 102.6° . When I saw him to-day for the first time I was struck by his sunken typhoid aspect, hollow dusky cheeks, livid lips, dry furred tongue, and parched skin. He replied intelligently to questions, but was at times delirious. Left knee much swollen, very tender, and as it was thought to be probably suppurating, I opened it the same evening and a quantity of turbid synovial fluid escaped. Lower part of thigh also swollen and tender; right knee painful, but not swollen. Drainage tube passed across the joint under patella, the joint irrigated with perchloride solution (1 to 2,000), and dry dressing applied.

27th December.—Temperature 101.4° . Dressed knee; little synovial fluid on dressings; washed out as before; patient evidently improving. Put on 3 grains quinine every three hours. Evening temperature 103° .

28th December.—Apparently improving; temperature 99.2° .

29th December.—Not so well; respirations hurried, with dry cough. Temperature 101.6° .

30th December.—Much worse. The symptoms detailed as existing before incision have increased, and there is some dulness of right side of chest posteriorly. Drainage tube removed; no discharge.

31st December.—Since yesterday the joint has become greatly swollen, very hot, and tender, and patient is delirious and restless. Temperature 103° . In the evening it was decided that, as the boy was probably suffering from septicæmia, due to some hitherto unremoved cause, amputation of the thigh was necessary. This was performed through lower third, and on cutting posterior flap a quantity of pus escaped. On section of the femur thin yellowish pus ran in abundance

from its medullary cavity. As the operation was believed to present no hope of proving adequate to relieve what was plainly an extensive osteomyelitis, the femur was removed entirely by F. Jordan's method, and the wound imperfectly closed by three or four metal sutures. An india-rubber drainage tube was inserted. Not much blood was lost, only the femoral and one branch requiring ligature, but patient suffered considerably from shock.

1st January, 1891.—The boy's appearance is improved. Though very pale, there is no lividity, and the tongue is moist and cleaning. Takes milk well. Evening temperature 99·2°.

2nd January.—Doing well. No delirium. Evening temperature 102·2°.

3rd January.—Temperature 100·6°; dressed and removed tube. A good deal of serous oozing; stump looking well; boy gaining strength; enjoys listening to the nurse reading to him. About 8 P.M., without any ascertainable cause, hæmorrhage occurred from the stump. The nurse was absent from the bedside at the time, but only for a few minutes, and on her return summoned the house surgeon. Death took place three-quarters of an hour later.

On *post-mortem* examination the heart was found normal, contracted, containing only a small quantity of blood, and a little white fibrin. Left pleura adherent (old pleurisy). Lower lobe of lung congested, crepitant throughout, secretion in bronchioles purulent. Upper lobe free from congestion, and the air tubes normal, but in the apex there were many small cretaceous nodules, and several softening caseous masses. Right lung non-adherent; otherwise resembles the left. Abdominal viscera anæmic. On examining the stump the two ligatures were found *in situ*, and quite firm. There was a quantity of clot behind the acetabulum and in that cavity, so that evidently the bleeding had proceeded from some small vessel behind the acetabulum. The stump was odourless, and there was no suppuration. The knee-joint appeared healthy and contained no accumulated fluid. On cutting deeply behind the knee, an abscess cavity was reached capable of holding 4 oz., between posterior surface of femur and insertion of hamstrings. From this cavity upwards almost to the level at which the femur had been cut across, the periosteum was gone, and just above the condyles the shaft was eroded in front and behind. So far as one could observe, the abscess was unconnected with the knee-joint. The contents of the medullary cavity of the shaft were found on section to be purulent from the lower epiphysial line up to the neck. The

lower epiphysis and the head of the bone appeared healthy. At the upper end of the shaft there was only slight streaking of pus through the bone marrow ; while at the lower end pus was present in considerable quantity, and welled out while the bone was being cut.

Remarks.—The initial stages in the pathological process probably date back some considerable time—several months perhaps—when, from a kick, periostitis resulted, the inflammation assuming a septic character latterly, and, on erosion of the shaft, giving rise to a very acute osteomyelitis. The symptoms appear to have been at first such as almost to warrant the diagnosis which was made—viz., rheumatism, and only assumed a more serious aspect a day or two before admission when, probably, the medulla became infected. As to the course adopted on discovering the state of the medulla, the idea did occur to me that perhaps scraping out the medullary cavity and draining it might arrest the septic process, and obviate necessity for amputation at hip, but I decided not to attempt this, fearing infection of the stump. It is a question whether such a course might succeed. It has certainly proved sufficient in cases of a less formidable kind. Thus, in the *British Medical Journal*, 14th July, 1888, Mr. Macnamara records a case of acute osteomyelitis of the neck of the femur in a strumous boy where incision and drainage sufficed to effect a cure, with perfect movement in joint. Is the removal of the tube on the third day to be suspected as the cause of the fatal hæmorrhage? I fear it may. The tube was removed because it appeared superfluous.

CURRENT TOPICS.

THE GLASGOW POLICE COMMISSIONERS AND THE DIPLOMAS IN PUBLIC HEALTH.—The Faculty of Physicians and Surgeons of Glasgow, with reference to the resolution of the General Medical Council that candidates for diplomas in public health should give evidence of practical out-door sanitary work under a medical officer of health, addressed a communication to the Town Council of Glasgow on the 28th January, 1891, urging that body to make such provision as they might deem proper for enabling a limited number of qualified medical men to obtain experience under the supervision of the Medical Officer

of Health in the duties of out-door sanitary work. We have now been supplied with an extract of the minutes of the meeting of the Glasgow Police Commissioners, held 30th March, 1891, which contains Dr. J. B. Russell's memorandum on the matter, together with the approval of the suggestions contained in the memorandum by the sub-committee and by the Commissioners, to whom the report of the sub-committee was duly submitted. After some preliminary observations, in which it is pointed out that the idea of the General Medical Council's resolution is that of an apprenticeship, that, therefore, not only out-door but all the administrative and office work must be embraced, and that effect must be given to the resolution without interfering with the progress of the routine official work of the sanitary authorities, and without prejudice to the right of the authorities either to give such facilities to candidates or to withhold them, Dr. Russell concludes as follows:—

“I would suggest, therefore, that the Commissioners should request the medical officer to take not more than two pupils, under the following conditions:—

“(1) They shall be called ‘pupil assistants.’

“(2) They shall be appointed by the medical officer for not less than *six*, and not more than *twelve* months, and their names reported from time to time to the Commissioners.

“(3) They shall pay no fee, and receive no salary, but shall assist in the work of the department in so far as may seem expedient, subject to the medical officer, and in return shall have every opportunity of studying the duties both of in-door and out-door sanitary work.”

The Faculty is certainly to be commended for its zealous endeavour to have arrangements made whereby effect can be given to the resolution of the General Medical Council, but Dr. Russell's memorandum is certainly a curious commentary upon the whole matter. If the vast sanitary organisation of Glasgow can do no more than accommodate two “pupil assistants,” then we imagine the number of medical men wishing to go forward to a sanitary diploma would require to be very limited indeed. If the work of the Glasgow Sanitary Department is too great to accommodate more than two men at a time without disturbing its harmonious operation, then it is possible that the work of urban and county sanitary officers may be too limited to permit of their taking a greater number of men, at least with benefit either to themselves or the pupils. Looked at from this point of view, it certainly seems as if the framers of the Medical Council's resolution had failed to

appreciate the full force of the law to which they were giving effect, and as if they had passed an enactment which was really not necessary. In this resolution we recognise another effect of that specialism and officialism which is breaking up the unity of the medical profession. It is difficult, indeed, to see how, with the great advance of medical science, this can be entirely avoided; but so far as sanitary work is concerned, it seems to us that if things go on as they are doing, the possession of a medical degree will bear the same relationship to the work of a medical sanitary official, as, let us say, the possession of an arts degree, or something equivalent, bears to the work of a barrister. That is to say, it will be necessary for the sanitarian to take his medical degree first, after which he enters the service of a sanitary authority, and his future connection with general medicine and its practice ends. At present, of course, most of our leading medical officers have had more or less experience of medical practice; in the future it will not necessarily be so; and what the effect may be on the public health and on the relations existing between the general profession and sanitary officials cannot yet be predicted.

ST. MUNGO'S COLLEGE.—The winter session of the Medical Faculty was closed on Friday, the 27th March last, Mr. Hugh Brown, Chairman of the Royal Infirmary, presiding in the absence of Dr. W. G. Blackie, the Principal of the College. Mr. Brown reminded the ladies and gentlemen present that it was one hundred years ago this year that the charter of the Glasgow Royal Infirmary had been obtained; and he also intimated that Dr. Blackie had persuaded six merchants of Glasgow to contribute £1,000 each towards the endowment fund of the College. There was a good attendance of students, who received their teachers, as each in turn presented his prizes, very enthusiastically. For the first time, we suppose, in the history of medical teaching in Glasgow, lady students came up on an equal footing with the men to receive certificates and prizes.

QUEEN MARGARET COLLEGE.—The closing of the first session of the Medical School was celebrated on Monday, 30th March last, in the large hall of the College, Dr. Robert Perry, President of the Faculty of Physicians and Surgeons, presiding. There was a large attendance of ladies and gentlemen interested in the medical training of women. The chairman, in the course of his remarks, spoke strongly in favour of the Muirhead Trust joining issue with the Queen Margaret

Medical School, so that one strong medical school for women might be firmly established in Glasgow. The chairman's suggestions were most favourably received by the meeting, and we certainly think that a great deal can be said for them. Professor John Young read the report of the session's work, which in every way was most satisfactory. He pointed out that 13 students had been enrolled, and all, except one who had to leave on account of illness, had gone steadily through the work of the session. He also expressed the thanks of the Council to the Managers of the Royal Infirmary, and to the Faculty of Physicians and Surgeons, for the ready and cordial way in which these bodies had assisted them in establishing the School on a sound and satisfactory basis. The lecturers then announced the names of those students who were entitled to receive prizes and certificates.

HALF-TIME WORKERS IN FACTORIES.—In view of the present legislation on this subject, the following letter may be of interest to some of our readers. We print the letter without any comment, precisely as it has been received:—

“LEEDS, 7th April, 1891.

“DEAR SIR,—We have been asked by a member of the Standing Committee on Trade of the House of Commons to express our opinion as to the desirability of raising the lowest age limit of half-time workers in factories to 11 or even 12 years.

“Our opinion is that the physical welfare of half-time workers does not demand any alteration of existing arrangements.

“We firmly believe, however, that the present Board School system of education places a premium on intellectual as opposed to physical development.

“A child, 13 years old, who has passed the fourth standard, is permitted to work full time; whilst one, who has not, is allowed to work half-days only. As a natural consequence, we have frequently brought before us stunted specimens of humanity, of high intellectual but of low physical calibre. The dullards are indeed the stronger. It is precisely the precocious children of both sexes, from 13 years upwards, who require professional judgment, not to refuse them employment, but to moderate it in quantity and in kind, according to their needs. If this supervision ceases, flat feet, crooked limbs, and spinal curvature will be much more in evidence than they are at present.

"What can anyone without professional training know about the early stages of physical degeneration, or about the ills of puberty, and the grave, yet insidious deviations from health which are apt to occur about that time? a period, indeed, when external growth and internal development are so active, and when overstrain leads but too often to life-long deformity, or to permanent health deterioration.

"We beg, therefore, to press upon your attention our decided conviction that 'young persons' (so-called), 13 to 16 years old, demanding full-time labour certificates, need our professional consideration more even than half-time workers, whose labour is light and of short duration.—We are, Dear Sir, yours truly,

"ALFRED RICKARDS,	} <i>Certifying Surgeons for the Leeds District.</i>
"WM. HALL,	
"JNO. A. NUNNELEY,	
"CHAS. J. WRIGHT,	

THE SEVENTH INTERNATIONAL CONGRESS OF HYGIENE AND DEMOGRAPHY will be held in Burlington House, Piccadilly, London, from the 10th to the 17th August next, and we have just received from the Honorary Secretaries a programme of the meetings of the Section of Preventive Medicine. The following arrangements have already been made:—

On Tuesday, 11th August, after a short address by the President, a discussion will be held upon "The mode of preventing the Spread of Epidemic Disease from one country to another." The discussion will be opened by Surgeon-General Mc'Nab Cunningham, C.S.I., of London. Other papers will be read and discussed as time permits.

On Wednesday, 12th August, a discussion will be held upon "Diphtheria, with special reference to its Distribution and to the need for comprehensive and systematic Enquiry into the Causes of its Prevalence in certain countries or parts of countries," with a view to its prevention. The discussion will be opened by Dr. Edward Seaton, of London, and continued, as is expected, by leading representatives of France and America. Other papers will be read and discussed as time permits.

On Thursday, 13th August, a discussion will be held upon "The relation of Alcoholism to Public Health, and the methods to be adopted for its Prevention." The discussion will be opened by Sir Dyce Duckworth, LL.D., M.D., of London, and by Professor Westergaard, of Copenhagen. Other papers will be read and discussed as time permits.

On Friday, 14th August, papers on miscellaneous subjects will be read and discussed.

A list of papers accepted by the Section will be published later. Gentlemen who are desirous of joining the Congress and taking part in any of the above discussions, or of communicating papers on other subjects within the scope of the Section, are requested to inform the Honorary Secretaries of the Section not later than the 15th June.

A provisional programme of Section IX (State Hygiene) has also come to hand, from which we learn that such subjects as the following are to be discussed:—The organisation of a Health Department of the State and its proper relation to other public departments; the education, position, and duties of medical officers of health, sanitary inspectors, artisans employed on sanitary works (*e.g.*, plumbers), midwives; need for popular instruction in hygiene and physiology in regard to health; the notification of infectious diseases and the action to be taken in respect of the notification.

REVIEWS.

On Severe Vomiting During Pregnancy: A Collection and Analysis of Cases, with Remarks on Treatment. By GRAILY HEWITT, M.D. Lond., F.R.C.P., F.R.S. Edin., &c. London: Longmans, Green & Co. 1890.

DR. HEWITT has the merit of persistency. In this book he returns once more to his flexion theory of the causation of the vomiting of pregnancy. He elaborates it with more than usual care, and supports it by short reports of over 100 cases. Many of the cases are very striking, and there are many valuable suggestions in the book, but his theory must be regarded as still far from being proved.

We may admit that in some cases the vomiting of pregnancy is due to flexion, without allowing that it is so in all cases. Would it not be a mistake to suppose that it is always due to one and the same cause? Is it not more probable that several conditions may have the same effect? When, for example, it occurs late in pregnancy, is its cause the same as when it occurs at the more usual period?

Perhaps, also, it is too much to assume that the uncontrollable vomiting is of the same kind as the ordinary vomiting of pregnancy, or even to assume that the cause of this vomiting

is always to be sought in the uterus. The changes which the whole organism undergoes in pregnancy might easily, at some point independent of the pelvic organs, produce an "irritation" sufficient to cause the vomiting.

If, however, one explanation had to be found to suit most of the cases of pregnancy-vomiting, we would be disposed to hold to the old theory that it is due to the distension of the uterus caused by the growing ovum. And the fact that the severe vomiting has often been found associated with twins and with hydramnios would favour this theory. Barnes's ingenious explanation of the morning sickness as due to the hydrostatic effect of the erect position in increasing the pelvic congestion would also fit in here. But, again, on such a theory, how are we to explain that the sickness and vomiting begin in some cases before the ovum has any appreciable size, or that in others they begin as the result of mental excitement?

Another pet theory of Dr. Hewitt's—that of the impaction of the anteflexed uterus—is again and again enforced in this book, but without any additional proof of its possibility. We cannot but think the word impaction wrongly used here. The anteflexed uterus may be bound down by inflammatory adhesions, or may sink down from relaxation of its supports, but its impaction in this position, from purely physical causes, independently of pathological products, is inconceivable.

Quite apart, however, from the author's "fads," as we may call them, we can recommend this book to our readers as the most complete essay on this subject which exists in our language. What is wanted in this, as in so many other departments, is a better established pathology, and for this evidently we must wait.

Pulmonary Tuberculosis: Etiological and Therapeutic. By
R. W. PHILIP, M.D. Edinburgh: Young J. Pentland.

THIS book gives us the results of a series of experiments on the lower animals (frogs and mice) by injecting them with a solution prepared in a special manner from tubercular sputum.

The author endeavours to show that these experiments support the theory that death in cases of pulmonary tuberculosis is due to the toxic influence of certain products of the growth of the tubercular bacillus in the tissues. The subject is a very interesting one, and we hope this book will cause both the author and some of his readers to investigate much more fully than has yet been done.

The experiments which he gives are unsatisfactory—because (1) the fluid which he uses is very uncertain in its composition and strength; (2) because the author has not, it would seem, taken the precaution to make control experiments by injecting similar animals with pure water, or, better still, with a solution prepared from non-tubercular sputum, say that of simple bronchitis, and to compare these control experiments with the others.

Our author shows that the solution which he prepared has a toxic and a depressing effect, and also that this effect can be combatted by atropine.

From this conclusion he recommends, in the second or therapeutic part of his book, that pulmonary phthisis should be treated with atropine when the disease has arrived at the stage of absorption. Our author's experiments are not sufficient to make us hope much from this line of treatment.

In the therapeutic part he divides the course of the disease into three stages—(1) catarrhal stage; (2) stage of invasion; (3) stage of elaboration or absorption. With regard to the first, we are not inclined to believe that pulmonary phthisis necessarily begins from catarrh; the results obtained by treating lupus, &c., with "tuberculin," show that foci of this disease may be present in the lung when there is no catarrh, and without any symptom pointing to disease in the chest.

The plan of injecting medicines into the trachea, which he recommends for the second stage, we have found both safe and easy, but we fear that it is not capable of hindering permanently the advance of the disease. Further experiment in this line of treatment may give us more light.

We would recommend the book to our readers as being very suggestive, though the conclusions are far from proven by the evidence which the author gives.

Transactions of the Royal Academy of Medicine in Ireland.
Vol. VIII. Edited by WILLIAM THOMSON, M.A., F.R.C.S.
Dublin: Fannin & Co. 1890.

THE Annual Report of the Irish Academy of Medicine for the past year is very satisfactory. From it we learn that the number of fellows was 244; of members, 28; and of student associates, 11. The fellows have increased by 21, the members have decreased by 6, and the student associates have increased by 9. £100 were invested in 2½ per cent Consols, and the total amount invested in the name of the Academy

now stands at £596, 2s. 4d. This is certainly a very satisfactory state of things, and the Academy is to be congratulated on its sound financial position. The Report also refers with deep regret to the deaths of Dr. Robert M'Donnell, a former President, and of Dr. Rutherford Kirkpatrick, a former President of the Obstetrical Section.

The present volume of Transactions contains a large number of interesting communications, which are arranged in the volume according to the section in which they were delivered. We observe that the largest number of papers has been delivered in the Section of Pathology, a very certain indication of the high value of the work at present being done in the Dublin School of Medicine.

The Year-Book of Treatment for 1891. London: Cassell and Company, Limited.

THE chief point to be noted regarding this year's issue of the Year-Book is its increase in size—480 pages, as compared with 324 last year. In other respects it follows the lines which have now become so well known—viz., a combination of abstracts of the chief articles of the year, a short criticism of the more important subjects and references. The field of medicine and surgery is divided into nineteen departments, each of which is well represented. This year-book is now recognised as one of the best of its kind, presenting, as it does, a most useful summary of scientific progress during the past year. To the busy practitioner it is likely to be of the utmost service.

The Medical Annual and Practitioner's Index: A Work of Reference for Medical Practitioners. 1891. Ninth Year. Bristol: John Wright.

THIS annual retains its popularity and usefulness. In the present issue we have not observed any new features calling for special remark, but we can heartily recommend the volume to our readers as one of the best of its kind. As the treatment of tuberculosis has excited more professional attention of late than any other subject in the whole range of medicine, we turned to the article on it in the Annual. We found the article to be an excellent one in every way—thoroughly scientific, concise, and practical.

MEETINGS OF SOCIETIES.

MEDICO-CHIRURGICAL SOCIETY OF GLASGOW.

SESSION 1890-91.

MEETING XIII.—13TH MARCH, 1891.

GEORGE S. MIDDLETON, M.D., *in the Chair*.

DISCUSSION ON KOCH'S TREATMENT OF TUBERCULOSIS.

PROFESSOR M'CALL ANDERSON introduced the discussion by reading a paper "On Koch's Treatment," which has been published in the *Lancet* for 21st March, 1891, at page 651. He also presented a number of cases which had been subjected to the treatment, notes of which are now given. Each case shown was accompanied by carefully recorded temperature charts.

CASES ILLUSTRATIVE OF KOCH'S TREATMENT.

BY PROFESSOR M'CALL ANDERSON.

The first two cases are illustrations of the disease in process of treatment, and the reactions which they have manifested, both locally and constitutionally, so far, have not differed in any material respect from what has been observed in the majority of cases.

CASE I. *Lupus Vulgaris Non-exedens*.—Helen S., æt. 33. Disease of twenty years' standing, affecting the skin over the right malar bone and outer quarter of right eyebrow. Numerous nodules, many isolated, were seen scattered throughout the patch.

Fourteen injections have as yet been given—the first of 3 cm. of the 1 in 100 dilution on the 26th of January, and the last of 60 cm. on the 8th of March, 1891.

Result (13th March, 1891).—The first effect of the injections was to cause, besides redness and swelling, abundant exudation, which dried up into thick adherent crusts, which were shed piece-meal. Two-thirds of these new-formed crusts have separated, disclosing a reddened, but otherwise healthy surface, in which few, if any, nodules are to be detected.

The treatment is still to be continued, but, so far, the result has been eminently satisfactory.

CASE II. *Lupus Vulgaris Non-exedens*.—Marjory C., æt. 17. Left cheek was the seat of a scaly violet-tinted patch, about 2 inches in diameter, the cicatricial surface of which was studded with numerous very typical "apple jelly-like nodules." Duration, 8 years.

Thirteen injections have already been given—the first of 2 cm. on the 2nd of February, and the last of 70 cm. on the 8th of March, 1891.

Result (13th March, 1891).—Here also abundant exudation, with the formation of thick adherent crusts, which gradually separated, followed immediately upon the earlier injections.

The result, although as yet not complete, is very satisfactory. The patch is contracted considerably in size, the nodules are almost entirely gone, and a gradual approach to the normal colour of the skin is observed to be going on.

The next two cases are instances of what may be called the "combined or mixed method of treatment"—that is to say, cases in which, in addition to the injections of tuberculin, other local measures were resorted to.

CASE III. *Lupus Vulgaris*.—Miss M., æt. 30 (private case). The disease, of 18 years' duration, was situated on the left cheek, extending from beneath the eye downwards for $3\frac{1}{4}$ in., and from the side of the nose outwards for $2\frac{1}{2}$ in. Three-fourths of this patch consisted of cicatricial tissue, studded over with nodules varying in size from one-sixth to one-fourth of an inch in diameter.

Nineteen injections were given—the first of 3 cm. on 17th January, 1891, and the last of 100 cm. on 9th March, 1891.

After the ninth injection, on 13th February, several nodules were destroyed with the nitrate of silver point, and after the fourteenth injection four remaining nodules were touched with the solid caustic.

Result (13th March, 1891).—The nodules have entirely disappeared, and the patch is now occupied by tolerably healthy looking cicatricial tissue, which is not at all conspicuous, and only noticeable on close inspection.

CASE IV. *Lupus Vulgaris*.—Fred. F., æt. 14. Active disease affected the greater portion of the right cheek and neighbourhood of left nasal duct, while scars in which the disease was gone, except slightly at the upper edge, existed over the left lower jaw. Duration, 4 years.

Eighteen injections were given—the first of 2 cm. on the 27th of December, 1890, and the last of 100 cm. on the 14th of February, 1891.

Result (13th March, 1891).—The two main patches are much improved in appearance, but the lachrymal fistula, present prior to the inoculations, persists.

Several softer and somewhat suspicious-looking portions of the patches were treated on the 7th of March, 1891, with solid nitrate of silver, and a further injection of 10 cm. given on the following day.

The crusts have now separated, and the patches show still further improvement.

The next two cases are pictures of the completed result.

CASE V. *Lupus Vulgaris*.—Maggie C., æt. 23. Disease affects the whole lower segment of the nose, the angle of the right ala nasi with the septum being the seat of ulceration and scabbing, of seven years' duration.

Twenty injections were given—the first of 5 cm. on the 25th of December, 1890, and the last of 100 cm. on the 19th of February, 1891.

Result (13th March, 1891).—Patient, who was somewhat weakened by the injections, now feels in excellent health, and the nose is completely healed, a casual observer failing to notice any deformity.

CASE VI. *Lupoid Eruption* (Heredito-syphilitic lupus ?).—Janet G., æt. 18. A coarsely granular, ulcerating, and crusting patch, of about 2½ inches in diameter, involved the nose and upper lip, partially destroying both, including the septum, and a similar though smaller ulceration involved the neighbourhood of the left inner canthus. Duration, 3 months.

Nineteen injections were given—the first of 3 cm. on the 10th of December, 1890, and the last of 100 cm. on the 11th of February, 1891.

Result (13th March, 1891).—The ulcerated surface has completely and absolutely cicatrised, without scab or scaling, and the deformity is hardly noticeable. All that remains of the ulceration in the vicinity of the left eye is a cicatricial spot, which is barely visible. The result is surprisingly perfect.

CASE VII. *Enlarged Cervical Gland*.—R. M. æt. 11½ years (private case). Enlarged gland on left side of neck at posterior border of sterno-mastoid, about size of large cherry, distinctly fluctuant, tender on pressure, but skin quite normal over it. Swelling began 6 months before. Above and in same side was a cicatrix an inch long, caused by removal of an enlarged gland nearly 3 years before.

Twelve injections were given—the first of 1 cm. on 31st January, 1891, and the last of 30 cm. on 2nd March, 1891.

After the first few injections the gland became more prominent and more tense; subsequently it became gradually smaller, flatter, less prominent, and less tense. On 6th March, a small incision being made by Dr. Hector Cameron, there escaped a small amount of pus mixed with calcareous matter. The incision was quite healed on 7th March, and only a minute cicatrix is now visible.

The last case is instructive from a surgical as well as from a medical point of view.

CASE VIII. *Hæmoptysis and Fistula*.—Wm. S., æt. 28. Five successive attacks of hæmoptysis within the last 13 months, occurring on an average at intervals of two or three months. Entire absence of physical signs, with exception of weakened R.M. at right base, and of symptoms, except slight uneasiness over both scapulæ. Two fistulæ in ano of 9 months' duration.

Thirteen injections in all were given—the first of 2 cm. on the 16th of January, and the last of 100 cm. on the 17th of February, 1891.

Result (13th March, 1891).—It is now six months since the last attack of hæmoptysis occurred. Râles which appeared, along with much pain, at the right base, after the second injection gradually disappeared within a fortnight, and have not since been heard. Both fistulæ, formerly painful on pressure, are now painless, and are both *completely healed*. There has been great improvement in the general health, and an increase in weight of 9½ lb.

Any further remarks on the cases selected seem uncalled for, as during the whole course of the treatment no new symptom manifested itself which has not either already been commented on in the remarks already made, or been described by other observers.

CASES TREATED BY KOCH'S METHOD IN THE VICTORIA INFIRMARY.

BY. ALEX. NAPIER, M.D.

Dr. Napier showed four cases of phthisis and lupus which had been treated by Koch's injections. (See page 356.)

Dr. Wood Smith said he was sure he expressed the feeling of the meeting when he said that they were very much indebted to Professor McCall Anderson and Dr. Napier for

bringing these cases forward. He thought he could corroborate all that they had said about the immediate effects of the lymph. He did not know of the meeting until he received the billet, and although he had with him notes of twenty-two cases treated by Koch's fluid, he thought it better to delay giving a detailed account of them.

As regards the *diagnostic* value of tuberculin, he said that was great. Thus, in a case of laryngeal phthisis, he had seen after some injections decided swelling of the parts, sometimes followed by ulceration; and white (necrotic) particles had been gradually thrown out. And when considerable pain in swallowing had been experienced, this was much relieved. In pulmonary cases there was no doubt also an effect locally, for patients complained of a pricking pain at the seat of the lesion with increased crepitation and expectoration. With lupus the effects were apparent. One case had reacted markedly on her face, head, and body, and even congestion had appeared around an old corneal affection. In differentiating lupus from syphilis they had seen the use of the lymph, as a case in Dr. Gemmell's ward had shown no reaction from tuberculin, but had been cured rapidly by specific treatment.

Of its *curative* power much could not yet be said. He might mention a few of the cases which had been under his immediate care in the Royal Infirmary. One gentleman, who had undergone fourteen injections for an affection of both lungs, had improved so far as to be able to return to work. Another, from a suburb of Glasgow, with dulness and mucocrepitant râles in the upper half of his left lung, and with albuminuria, had left the hospital with less crepitation and general improvement. An advanced case, with both lungs implicated, had been under treatment for three months, and had improved a little—the metallic signs had been even diminished—and he had gained two pounds in weight. Another man, who had since gone abroad, had gained eight pounds in weight, and had left apparently improved. His last injection had been eighty milligrammes.

Dr. Wood Smith said he was working patiently, hopefully, and giving Koch's remedy a fair trial. They could not speak before next winter of the pulmonary cases which had been under treatment. Put a man into good hygienic conditions, as in hospital, and he would generally improve; so one could not ascribe all the favourable changes to the action of the lymph.

They had had no frights. They had combated a comatose tendency by giving coffee, and free stimulation had been required in other cases. Hæmorrhage had not given anxiety.

There was a difficulty in getting cases in a proper stage for undergoing this treatment. He felt much obliged to Drs. Anderson and Napier for their communications, and what they had told them would strengthen their hands. He hoped, on a future occasion, to bring forward some of the cases treated in the Royal Infirmary.

Dr. Napier thought that his two cases of phthisis shown could not be said to owe their improvement to the hygienic surroundings in hospital, as they were in good circumstances at home.

Dr. Alex. Robertson stated that three cases of phthisis pulmonalis under his care, and one case of lupus, had been treated by injections of Koch's liquid. The effect of treatment on the chest cases had already been recorded by Dr. Lindsay Steven, along with other cases, in his preliminary report on the patients in the Royal Infirmary treated by Koch's method. This brought them up to date of publication in the *British Medical Journal*. He (Dr. R.) would now fully report these cases, as the treatment had been stopped in them all on 21st February. At the beginning of treatment, the patients had been examined by a committee of the staff, consisting of Drs. Wood Smith, Lindsay Steven, Workman, and himself, and a note entered into the journal of their condition. Careful observations were made every four hours, night and day, during the whole time of treatment—a period of 71 days. The following is a brief summary of each of the cases:—

CASE I.—R. M'D., age 47, drover. State of chest at beginning of treatment, 9th December, 1890:—Marked dulness on percussion, bronchial breathing, increased vocal fremitus and impaired expansion in right supra-spinal region, but no moist râles. On the same side, in front, distinct dulness in supra-clavicular region and slight dulness below the clavicle. On left side, breathing vesicular, but puerile. A small quantity of muco-purulent sputum, containing bacilli.

General Symptoms.—Temperature: before injections, highest point noted, 101°; lowest, 96·8°; average, 99°; in general from 1° to 2° F. of difference between morning and evening temperature. During injections (excluding the reaction period), highest, 103·6°; lowest, 97·8°; average, 99°. Pulse: before injections, highest, 96; lowest, 80; average, 87. During injections (excluding reaction period), highest, 130; lowest, 70; average, 86; Respiration (excluding reaction period): highest, 28; lowest, 20; average, 22. During injections, highest, 32; lowest, 16; average, 22.

The patient had altogether 14 injections, the first consisting

of 1 milligramme, and the last of 14 milligrammes. After each injection he had headache and pain in the lumbar region, and these were present on several occasions when there was no rise of temperature after the injections. During the reaction, perspiration was increased; in the interval it was less than before treatment. The expectoration was increased during the reaction. Towards the end of treatment it became more profuse and purulent. The cough was worse after each injection. Weight before treatment, 7 st. 4 lb. It increased gradually till 4th February, when it was 7 st. 11½ lb. It then diminished gradually till the 21st, when he weighed 7 st. 8 lb. Treatment was stopped at the patient's own request. Examination of the chest on that date showed little difference in the dull area, except that a few moist râles in the supra-clavicular and supra-spinal regions were additional to the other indications when treatment was begun.

CASE II.—E. R., age 22, china gilder. State of chest, 9th December, 1890:—Behind: dulness on percussion in left supra-spinal region. In front: marked dulness in left infra-clavicular region, especially at its outer and lower part, and some dulness above the clavicle. Breath-sounds above left clavicle very feeble. Many moist crackling râles in infra-clavicular dull area. Weak breathing and prolonged expiration. Prolonged expiration above left clavicle.

General Symptoms (not including period of reaction).—Temperature: before injections, highest, 101·8°; lowest, 98·2°; average, 99·6°. During injections, highest, 102·2°; lowest, 97·8°; average, 100°. There was no reaction to the earlier injections till the sixth, when he got 8 milligrammes, and then it only rose to 104·2°. With 4 milligrammes he had headache and sickness. Pulse: before injections, highest, 120; lowest, 90; average, 100. During injections, highest, 118; lowest, 76; average, 96. Respirations: before injections, highest, 34; lowest, 16; average, 27. During injections, highest, 36; lowest, 16; average, 24.

Before treatment patient perspired very little, but after his system began to react perspiration increased greatly, unless when controlled by atropin. Expectoration was only slightly purulent and small in quantity before injections; bacilli were present. The sputum was more abundant for a day or two after each injection which took effect, and it contained more pus at the close of treatment. On one occasion, shortly before it was stopped, there was a little blood in sputum. Weight: before treatment, 9 st.; highest attained

during treatment, 9 st. 12½ lb., which was on 4th February. Between that date and 21st February, when it was stopped at his own request, it had fallen to 9 st. 8 lb.

Note by Dr. Robertson at close of treatment.—The moist râles are more numerous below the left clavicle, and a few can be detected above the right one, where they were not observed previously. No other apparent changes in physical signs.

CASE III.—A. M., age 37, labourer. State of chest on 9th December, before treatment: behind, sub-bronchial breathing over upper third of left lung, and moderate dulness in that region; on right side, prolonged expiration at upper part. In front, the left side does not expand so well as the right. Distinct dulness and bronchial breathing above left clavicle; less below clavicle, but moist crackling râles there. On right side, slightly prolonged expiration above clavicle. Elsewhere the breathing is nearly normal, but somewhat puerile.

General Symptoms (excluding reaction period).—Temperature: before treatment, highest, 101.2°; lowest, 97.8°; average, 99.6°; usually from 1° to 2° difference between morning and evening. During treatment, highest, 103.4°; lowest, 97.8°; average, 99.4°. Pulse: before treatment, highest, 96; lowest, 70; average, 82. During treatment, highest, 108; lowest, 70; average, 86. Respirations: before treatment, highest, 24; lowest, 17, average, 21. During treatment, highest, 34; lowest, 16; average, 20.

Patient had 14 injections in all, the first consisting of 1, the last of 14 milligrammes. Sweating was profuse when treatment was begun; much the same at its close. Expectoration: no change in its characters, except that once, in an interval between injections, it contained a little blood. He felt weaker and his general condition less satisfactory during the whole time of the injections, but since stopping them has felt better. Weight: before treatment, 7 st. 12 lb.; highest reached, 8 st. 2½ lb. on 28th January; when stopped, 7 st. 12 lb.

Note by Dr. Robertson.—State of chest on 21st February: There is little difference in the character of the signs, except that above the right clavicle there are a few moist râles at the end of inspiration, which were not present when treatment was begun.

CASE IV.—W. C., age 30. Lupus of nose of nine years' standing, sometimes healing under treatment, and then breaking out again; a considerable part of one side of the nose destroyed by successive attacks; side of lip and nose scarred

and seamed by the disease; a sore of about the diameter of a fourpence piece on admission, and some nodules on the adjoining part of the lip. Treatment was begun on 30th January, and up to date he has had 8 injections. The sore has healed for the most part, but has broken out farther back. A part inside the nose has partially healed, but farther back he feels that there is a sore. A part of his moustache on the affected side has fallen out, apparently due to the local inflammation induced by injection. Weight at the commencement of treatment was 10 st. 3 lb.; on 7th March, 9 st. 13 lb.

The treatment was dangerous if the disease were widely distributed—of this there could be no doubt. The results were also uncertain, so that it would be right to warn any patient on whom it might be tried that, though benefit might follow its use, there was no approach to certainty in any case; and that, on the other hand, the disease might be distinctly aggravated by it. The cases in which he thought the treatment might be beneficial, and was at least worth further trial, were those where the disease was limited to one or both apices, and the general condition was fairly good.

Dr. R. M. Buchanan desired, like the other members who had spoken, to express his thanks to *Dr. McCall Anderson* and *Dr. Napier* for their very interesting demonstrations. In cases of phthisis his experience (in the Western Infirmary) had been that the reaction was not generally—and especially as regarded fever—so great as in cases of lupus and tuberculosis of joints. What was the explanation of this? He thought the explanation might be that the system had already acquired a certain degree of tolerance from the action of a substance of the nature of “tuberculin” manufactured, so to speak, at the seat of the lesion in the lungs. With regard to the question of dosage, it was not safe or advisable to begin with more than 1 or 2 milligrammes in lupus and joint cases. Judging from the severe reaction produced in the majority of such cases by 2 milligrammes, it was highly probable that quite a sufficient reaction would have followed from even less than 1 milligramme. The dose should be regulated so as to obviate as far as possible a temperature exceeding 102° F. He was not inclined to think it a rational thing that the temperature should be made to register 103° or 104° every two or three days. It was a notable fact that the phthisical patients appeared, as a rule, distinctly benefited by the earlier small doses, while as yet there had been no very pronounced reaction. The question had been raised as to how much of the notable improvement in certain cases was to be ascribed

to the remedy, and how much to the favourable conditions attached to residence in hospital. This was not an easy point to settle, but it was at least legitimate to infer from what was seen in external tuberculosis, that in the walls of cavities and around caseous areas there would tend to develop healthy "granulation" tissue. The administration of the fluid had served to show in an unmistakable manner the relationship of fever production to bacterial products.

Dr. Lindsay Steven remarked that when he first began to consider the question of Koch's treatment, he did so with a perfectly open mind, and was ready to be convinced either one way or the other. For six weeks the treatment of about 30 cases had been carried out, and had been observed night and morning in the Glasgow Royal Infirmary by Dr. Charles Workman and himself. The general impression left on Dr. Lindsay Steven's mind in regard to the treatment in all kinds of cases had been one of disappointment. Even the cases shown to-night had not done very much to take away the feeling of disappointment, because he could remember, when he was house physician to Dr. M'Call Anderson, cases of lupus as well cured as those shown to-night, and therefore he doubted if Koch's fluid had had much to do with the curative process, beyond perhaps assisting the other methods of treatment employed, and possibly hastening the resulting improvement a little.

To be sure of the part played by Koch's fluid one would need to adopt Dr. Napier's plan, and make use of Koch's fluid and Koch's fluid alone. The cases shown had been under treatment for three months. His impression was that he had seen cases as well cured in that time under the old methods. A similar remark applied to the cases of phthisis; some of the cases of phthisis which he had seen lately were the worse for the treatment by tuberculin. He had conducted a *post-mortem* in a case treated by Koch's method, and he thought a "galloping consumption" (*i.e.*, an intensely acute local process had occurred in the lungs) was induced by the treatment. He had seen a case in which a profuse hæmoptysis occurred after the first injection, and in which the patient subsequently died.

At the same time he was convinced that in the fluid we have an agent which exercises a most profound effect on tubercular lesions—whether a curative effect, we cannot say just now. While agreeing generally with Dr. Robertson, he could not say that there was the doubt as to its diagnostic value, which he had expressed. Often, in obscure cases, a patient was put on an anti-syphilitic treatment for diagnosis, and we would not

be inclined to say a case was non-syphilitic until we had pushed the remedies—with negative results ; so, also, we must act with tuberculin as a diagnostic agent. The whole subject required prolonged observation, but his feeling at present was one of disappointment, at least as regards the curative action of the remedy.

Dr. Walker Downie had been much interested in the remarks of, and the cases shown by, *Dr. McCall Anderson* and *Dr. Napier*. Those cases, up till date, appeared to show considerable improvement. Whether the improvement exhibited would be permanent and progressive, or whether those patients, as in several reported cases, would, after a time, fall back again, remained, of course, to be seen. He had not personally practised Koch's injections, nor had he been much of a believer in his prophecies regarding "tuberculin," but he had been an interested onlooker. In an official capacity he had had the privilege of examining and reporting on the laryngeal condition in several cases of phthisis laryngea and phthisis pulmonalis previous to their being subjected to this form of treatment. And he had again examined some of those cases during and after treatment ; and he had to say that, with one exception, where any local change occurred, it was of a retrograde character.

In some three cases examined by him he reported the presence of a slight localised swelling on the inner surface of the inter-arytenoid membrane, and the covering mucous membrane pale in colour, as if it had been macerated. This, in each case, he considered to be a very slight, though, to his mind, quite a distinct tubercular lesion, and he gave it as his opinion, although there had been no suspicion of laryngeal mischief, that, if Koch's fluid affected tubercular deposits as was then stated, those patients might be expected to develop difficulty in breathing, interference with free use of vocal cords, and the surface of the swellings described might become raw. After the first few injections all three had slight interferences with breathing, all three became husky, and in one ulceration of the part took place, rendering deglutition and phonation alike difficult and painful. In all three he had the full satisfaction of having his diagnosis confirmed, but he feared it was at the expense of the patient's health and comfort.

There might be, as had been said, a great future for this form of treatment, but until this could be demonstrated it should be employed with great caution. In combination with other forms of treatment—treatment aimed at the destruction

of the cast-off bacilli—it might prove useful in some cases. This combination might prevent such mischief as he had known to occur—the setting up of a general tuberculosis where previously there appeared to be a local deposit only.

Dr. Middleton had examined very carefully the two cases of phthisis pulmonalis treated in *Dr. Gairdner's* wards. These were under observation for some time before the treatment was begun. The results had impressed him very unfavourably with the treatment of phthisis by Koch's fluid: the patients had lost weight, had become worse in other respects, and had developed disease in places supposed previously to be free from it. There was nothing to support the view that the tuberculin had merely brought out latent mischief in these new seats of disease.

The cases treated had been early cases, and therefore favourable ones. One had been so early that the physical signs were almost *nil*, and in it the physical evidences which had first developed had been in the other lung from that which had been considered the affected one, and they had developed some days before the temperature rose; the throat also became very seriously involved. In this case no tubercular bacilli had been found in the sputum before treatment had been begun; but they had been found afterwards in considerable numbers. If he were consulted by anyone suffering from phthisis, he would not recommend the treatment.

As to its influence upon the blood, observations should be made for the bacilli there. *Dr. R. M. Buchanan* had failed to find bacilli in the blood in several cases examined. And as regards the ordinary microscopic examination of the blood, he had been led by *Virchow's* paper to notice this point, and had found the white blood corpuscles in one case increased in number and increasing under observation. It had been suggested that this might be a favourable indication, the white corpuscles multiplying to act as phagocytes.

Dr. Robertson added that it was not so much the diagnostic power of the remedy that he doubted as the applicability of this in practice.

Prof. McCall Anderson and *Dr. Napier* replied. In doing so, the latter said that the *method* of using the remedy had much to do with its diagnostic value. *Guttmann* began by giving 1 mg.; if there were no reaction he gave 3 mg. after an interval of two days; after another interval of two days, 5 mg.; and after other two days, 10 mg. In Germany they had used the fluid much more boldly than here, and perhaps

it was because they had been unduly timid in this country that the results had not been so satisfactory.

As regards the *dose*, it depended upon the *physique*, and could thus be larger in lupus; upon the *age* of the patient, (children respond so actively that it was doubtful if it should be given them); upon the presence of any *coincident disease*, *e.g.*, in anæmia and in marked valvular disease the reaction was usually very active; and upon the *extent* of the external eruption or the internal disease; and if there were extensive internal disease it should not be used at all.

He shared Dr. Lindsay Steven's disappointment to some degree, but had had cases which seemed distinctly benefited.

MEETING XIV.—20TH MARCH, 1891.

CHARLES WORKMAN, M.D., *in the Chair*.

I.—POST-MORTEM EXAMINATION OF THE CASE OF LARGE SACRAL TUMOUR SHOWN AT A RECENT MEETING OF THE SOCIETY.

BY DR. BEATSON.

THE child was shown at the meeting on 5th December, 1890. Those who saw the case will remember that the gluteal and perineal regions were occupied by a very bulky tumour of a firm, and in some places elastic feel, from the presence of cysts, and that the child was in a very weak and emaciated condition. I stated that the child was born with the lump, and that the idea that first found favour about the lump was that it was a spina bifida due to defective ossification in the vertebral column, but that I felt, from a more recent examination of the child under chloroform, that that view was erroneous, and that the growth sprang from the outer wall of the coccyx, thus placing it in the category of the growths spoken of as "congenital sacral tumours."

Upon the question of operative measures being undertaken, I expressed an opinion that while I would not recommend any attempt at removal, I did not think it was impossible. Other speakers thought the opposite. They were right and I was wrong, as the *post-mortem* examination showed.

This, then, is clearly a teratoma, by which I mean a congenital tumour, remarkable for the variety of elements it contains. Another term for it is that of congenital sacro-coccygeal tumour. As to why this region should be the seat of these

growths, and why they should be more common in females, as this one was, is not yet clear.

Great diversity of opinion has been expressed as to their pathology—some have thought them due to a degeneration of Luschka's gland; more recently Sutton has associated them with the post-anal gut.

In reference to this latter view, I may mention some of the points on which he relies:—

1. They contain formed tissues derived from the three germinal layers.

2. In the situations where these tumours are found, these three layers are brought together into continuity, at any rate temporarily.

3. These temporary unions are associated with the existence of a canal and passage, which exists for a time, and then disappears.

4. The neurenteric passage between the central canal of the cord and the alimentary canal is the cause of these growths.

I may say that Dr. Coats has considered this post-anal gut theory, and does not consider it tenable here.

As regards the best classification of these tumours, I believe that the best one is that which recognises the following groups:—

1. Attached foetuses.

2. Congenital tumours with foetal remains.

3. Congenital cystic tumours of various kinds.

4. Congenital fatty, fibrous, and fibro-cellular tumours.

5. Caudal excrescences.

I look upon this case as interesting, too, on the question of the development of cancer.

A *post-mortem* examination was made the day after death. I need not give it at length, but may say that the leading features of it are as follows:—

1. The lungs and liver were found the seats of numerous secondary deposits of soft consistence and of varying size. One of the largest ones was at the extreme right of the anterior border of the liver, and was the seat of considerable hæmorrhage.

2. Below the neck of the bladder the urethra communicated with a large cavity with which the rectum and vagina also communicated. In the case of the rectum, the opening was about $2\frac{1}{2}$ to 3 inches above the anus.

3. The tumour sprang from the anterior wall of coccyx, and lay between it and rectum, though it descended down to a great extent between them.

4. Microscopic examination shows the presence of skin, thyroid gland, rudimentary muscle, fat, and cancerous material.

As regards the after history of the case, nothing was done in the way of operation. The child was kept in hospital, and everything done to make it happy and comfortable. It remained in very much the same condition for two or three days, being peevish and irritable, and not inclined for food, when chest symptoms in the shape of cough, with coarse mucous râles, made their appearance, together with some rise in temperature. These yielded somewhat to expectorants and poultices, but never left her, and were liable to severe exacerbations. In fact, the cough and difficulty of breathing, with high temperature, were the leading symptoms until the child's death on 15th January, 1891. All this time there was an apparent increase in the size of the tumour, the skin over which was so tense and red in certain places that it seemed as if it would burst. This, however, it did not do, and my own view was that the growth was very much the same size as when the child was shown at the Society.

Dr. John Lindsay Steven said that he had but little experience of sacral teratomata, but he could not help thinking that in many respects this tumour was unique of its kind. What struck him as very remarkable was the secondary cancerous tumours which had resulted from the primary growth.

Dr. Lees asked if *Dr. Beatson* could give any proof that the secondary deposits in the liver, &c., were cancerous. He cites the fact that no fungus or parasite being found in the growth (congenital), it might go to prove that such was not necessary in cancer. Perhaps the partisans of the fungoid theory might argue that the deposit was not one of cancer because the fungus was not found in it.

Dr. Workman supported the view that the tumour was due to the inclusion of embryonic tissue among the tissues of the patient.

Dr. Beatson, in reply, stated that operation was declined because of the child's general condition. Those who saw the child at the meeting would remember how weak and fragile it appeared. During life no suspicion of the malignant nature of the growth was entertained, nor was the condition of the lungs thought to be due to any secondary deposits. As regards the question by *Dr. Lees* as to whether the absence of an organism might not be taken as an argument against the growth being cancerous, I would remark that the presence or absence of an organism is not necessary to declare a tissue to be cancerous—the microscope will decide that—and there can

be no doubt that both the upper part of the tumour and the secondary deposits were of a cancerous nature, in that they consisted of epithelial cells arranged in alveoli.

II.—CASE OF SPINA-BIFIDA WITH TALIPES CALCANEUS.

BY DR. BEATSON.

Dr. Beatson showed the lower limbs from a male child, aged 6 months, the subject of spina-bifida in the lumbar and sacral region, which he saw in consultation with Dr. Kelly, and which had been injected with Morton's fluid. The puncture seemed to heal, but leakage occurred from the cyst wall, and ten days afterwards the child died. The case was brought forward as an illustration of a very rare form of club foot—viz., talipes calcaneus, and as bearing on the question of the pathology of club foot. It would favour the muscular or musculo-nervous theory, which is certainly preferable to the osseous view, although more recently the mechanical pathology of club foot as resulting from malposition in utero seems to be gaining ground.

Dr. Kelly said—I saw the child from birth, when it presented the deformities of spina-bifida, calcaneum of both feet, and hernia inguinal on both sides. The spina-bifida was about the size of a large-sized orange, and sessile. The child was in a very emaciated condition, and did not look like living. However, it lived on, and gradually gained flesh. The spina-bifida, however, from being sessile became pedunculated, and the walls became very much thinner—so much so, that they looked like giving way. After the operation by Dr. Beatson, the child seemed to improve for a few days, then leaking took place, not from the puncture, but from several places on the surface, and the child gradually sank and died quietly ten days after operation.

The child's head, previous to the operation, presented a very hydrocephalic condition, and owing to the leakage this condition gradually disappeared, leaving the bones of the head quite collapsed.

III.—CASE OF OSTEOMYELITIS OF THE SHAFT OF THE FEMUR.

BY DR. W. F. GIBB. (See page 370.)

Dr. Beatson said—In connection with Dr. Gibb's case, I would only mention how apt one is to be misled by the fugitive pains that are present in these cases in many of the joints. They have all the characteristics of rheumatism, but

are really septicæmic, and are indicative of the severe constitutional and poisoned condition of the system that is so characteristic of these cases.

Dr. John Lindsay Steven said that he believed that cases of malignant periostitis and osteitis were, as regards their ultimate primary cause, somewhat comparable to cases of ulcerative endocarditis or, as it had been called, spontaneous pyæmia. What the exciting cause of such malignant cases was he could not venture to say, except perhaps that in subjects of low vitality parts specially weakened by repeated slight injury (as in *Dr. Gibb's* case) might act as a favourable breeding ground for malignant organisms. It was within his experience, as a pathologist, that such malignant periostitis without any external wound might occur; and looking at *Dr. Gibb's* case from a pathological point of view, he thought that no operative procedure was to be looked upon as very hopeful, in the stage at least at which the disease had arrived on the patient's admission to the wards.

Dr. Gibb, in reply, said that *Dr. Beatson's* remarks regarding the frequency with which cases of this kind were mistaken for rheumatism applied to the one narrated. He did not quite share the opinion expressed by *Dr. Steven*, that the case was probably hopeless on account of septicæmia. As a matter of fact, the boy appeared to be making satisfactory progress up till the occurrence of the hæmorrhage.

IV.—A METHOD OF EXAMINING SPUTUM FOR TUBERCLE BACILLI USED IN THE PATHOLOGICAL DEPARTMENT OF THE GLASGOW ROYAL INFIRMARY.

By *DR. J. WILSON CAMERON*. (See page 283.)

Dr. R. M. Buchanan thanked *Dr. Cameron* for his interesting demonstration. The only point to which he was inclined to take exception was the short time during which the specimen was exposed to the staining reagent. He had found it a very good plan, in selecting the portion of sputum for examination, to place some of the sputum on an ordinary slide, when the portion was easily picked out and separated with a needle.

Dr. John Lindsay Steven said that he was, so far as he knew, the second, if not the first in Glasgow, who had ever found the tubercle bacillus in sputum, some 8 years ago, when he was assisting *Dr. Joseph Coats*, and when he and that gentleman succeeded on the same day, at the same table, and in the same room, in demonstrating the organism. What struck him very forcibly was the ease with which these organisms

could now be found as compared with 8 years ago. He and Dr. Workman had seen the method (at present demonstrated) in Gerhard's division of the Charité in Berlin, and on their return Dr. Cameron had undertaken the practice of the method in the pathological department of the Glasgow Royal Infirmary. Dr. Steven was convinced that as a practical method it possessed many advantages over the old cover-glass plan; and he was sure that if bacilli were present in the sputum at all Dr. Cameron would not fail to detect them by its use.

Dr. Workman called attention to the fact that absolute alcohol will not remove aniline stains from nuclei or from micro-organisms unless water be also present. And if an aniline stain be dissolved in absolute alcohol it will not stain tissues of micro-organisms. He also pointed out that when using slides, on which to spread the sputum, no cover-glass was required, the oil immersion lens being used directly over the specimen.

Dr. Cameron, in reply to Dr. Buchanan, said the advantage over the cover-glass method is that we have several specimens of the same sputum on the slide. It is well known that one specimen of a sputum may show no tubercle bacilli, and another portion show a different state of matters. The slide method reduces this to a minimum.

V.—EPITHELIOMA OF FINGER.

By DR. DALZIEL.

Dr. R. M. Buchanan showed microscopic sections, and read the following notes in the absence of Dr. Dalziel:—

The patient was a woman, aged 68. On the middle finger of the left hand, and just above the first joint, was, as long as she could remember, a small warty growth. During the past three years patient earned a living by sewing corduroys, which cloth being rough caused some irritation of the wart, which now and again inflamed, leading to a cessation of work, followed by complete recovery. A year ago, however, the part became swollen and hard, which swelling gradually increased in spite of rest and other treatment. Six months ago the lump ulcerated on the surface, and since then has never healed entirely though occasionally improvement took place. The ulcer presented had raised margins with a firm red granular base, and was firmly adherent to the deep structures of the finger. No signs of glandular involvement. The finger was amputated at metatarso-phalangeal joint.

ABSTRACTS FROM CURRENT MEDICAL LITERATURE.

NERVOUS DISEASES AND INSANITY.

By DR. R. S. STEWART.

Pathological Anatomy of Tic-douloureux. By Dana (*Journal of Nervous and Mental Disease*, January, 1891).—This is the subject of a paper read by Dr. Dana at a meeting of the New York Neurological Society, and he expresses the opinion that the ordinary cases of tic-douloureux are due, not to neuritis and degenerative changes in the nerve, but mainly to an obliterating arteritis of the nutrient vessels of the nerve. His reasons for this view are that the disease occurs only at a time of life when degenerative changes in the arteries begin, that it follows a certain fixed vascular distribution, that in four cases examined no noteworthy change was observed in the nerve, whereas in three there was striking evidence of arterial disease, and that therapeutical experience (e. g., the relief sometimes afforded by nitro-glycerine) strengthens the view that arteritis is a factor in the disease.

The Pathology of Pachymeningitis Interna Hæmorrhagica. By Wigglesworth (*American Journal of Insanity*, January, 1891).—In a former paper by this writer, the view is maintained that the morbid appearances described under the term pachymeningitis are not the result of inflammation, but are solely due to the effusion of blood into the subdural or arachnoid space, and in this article some further remarks are made in support of the theory. It is pointed out that even in the most recent and acute cases there is absolutely no sign of inflammation of the dura, and that on scraping off the new formation its epithelial surface is smooth and shining, and exhibits no injection, softening, or thickening. The slight thickening and roughness of the dura, which is found only in cases of older standing, are purely secondary, and the result of the irritation of the effused blood. The lamination of the new membrane is not regarded as any evidence of inflammatory action; it may result from successive hæmorrhage, or even from one single hæmorrhage, if that is a pretty free one. In support of the view that these membranes are of hæmorrhagic origin, and that the source of the hæmorrhage is to be found in the vessels of the pia, a case is cited in which a false membrane existed, and in which there was a small linear hæmorrhage lying beneath the arachnoid. At each end of this hæmorrhage a small ruptured point could be clearly seen, and at the bottom of the minute orifices the subarachnoid clot was exposed.

Traumatic Injury of the Brain. By Dewey and Ricse (*American Journal of Insanity*, January, 1891).—An insane farmer was found, three weeks after his admission to the Kankakee Asylum, to have a nail embedded in his skull. This was of galvanised iron-wire, was $2\frac{1}{8}$ inches long, and was firmly fixed $\frac{1}{8}$ of an inch to the left of the middle line, 3 inches behind the coronal suture. The removal of the nail was followed by paralysis of the right arm, face, and leg, and rise of temperature and an aphasic condition. Trephining was afterwards performed, but without benefit, and death occurred four weeks after admission. On *post-mortem* examination, the nail was found to have penetrated the ascending parietal at its upper border, and passed downwards, forwards, and outwards, parallel with the median fissure, and its course was marked by liquefaction of the brain tissue. There was, in addition, an exudation of thick, yellow, offensive pus over the left hemisphere, from the ascending parietal forwards, but this the writers attributed to a severe head injury sustained prior to admission.

The other case recorded is that of a butcher, who was assaulted by a lunatic with a butcher's cleaver. A piece of bone measuring 3 inches in width and 2 inches vertically was almost completely removed, and the occipital lobes were wholly exposed. The parts were restored, and healing took place by first intention. At no time were there any motor or sensory disturbances, and recovery was complete at the end of a fortnight.

System Sclerosis of the Spinal Cord, Associated with Diffuse Collateral Degeneration. By Putnam (*Journal of Nervous and Mental Disease*, February, 1891).—The eight cases here described, all of them fatal, and four of them followed by autopsy, presented many points of likeness. The symptoms generally were those of subchronic progressive impairment of both the sensory and motor functions of all four extremities, associated after a time with a moderate and nearly uniform degree of muscular wasting and general emaciation. The cases had a course of about 2 years, and presented complete paraplegia as a terminal symptom. In three of the cases marked inco-ordination was present, and lancinating pains existed in only one case. All the patients but two were women past middle life, and the subjects of considerable debility, and in some of them obstinate diarrhoea was a prominent symptom. Several had small quantities of lead in their tissues, two had had malaria, and neuropathic inheritance existed in some. The medulla oblongata and pons were free from any material change, but the spinal cord and peripheral nerves presented a greater or less degree of alteration. There were a relatively chronic sclerosis of the posterior and lateral spinal columns, a more acute and recent degenerative change in adjoining areas, partly diffuse and partly systemic in distribution, a diffuse degeneration of varying severity in the ganglionic matter of the cord, and probably the the intervertebral ganglia and moderate degeneration in the nerve roots and peripheral nerves. The cord in each of the four cases examined was manifestly atrophied, the measurements of the cross sections being under the average. The writer regards the sclerosis of the long tracts as a primary degeneration, and the diffuse changes as terminal or secondary.

Post-Mortem Appearances in a Case of Spastic Hemiplegia. By Goodall (*Journal of Mental Science*, April, 1891).—A case of idiocy, with spastic paresis of the right limbs, more pronounced in the arm, and impairment of speech. The conditions revealed on examination were atrophy of the left hemisphere, with marked wasting, pallor, and induration of the central and third frontal convolutions, the upper part of the ascending frontal being, however, unaffected; atrophy and sclerosis of the nerves of the right arm and leg, more marked in the former; atrophy and diminution in number of pyramidal nerve fibres in left side of pons and medulla and left crus and internal capsule; entire absence of atrophy or sclerosis of spinal fibres. The co-existence of morbid changes in the central motor area and peripheral nerves, with integrity of the connecting spinal tract, may, the writer thinks, be explained by supposing that the nerve fibres connected with the affected limbs may have proceeded by way of the crossed and direct pyramidal tracts of both sides of the cord, and may thus have failed, though individually shrunken, to attract attention.

MEDICINE.

By JOHN H. CARSLAW, M.A., M.B., C.M.

Transmission of Tuberculosis by Cow's Milk.—In the Académie de Médecine (24th February, 1891) M. Ollivier related the facts of some cases bearing upon this subject. He had attended a patient (a young woman of 20 years of age) who had died of tubercular meningitis of very rapid

development, but in whose family there were no tubercular antecedents. She herself had previously enjoyed apparently good health, but four years before had left a boarding-school in Chartres, where she had been a scholar. Thirteen girls at this school had become tubercular, although no family predisposition could be discovered, and seven of them had died. A cow whose milk had been supplied to the institution had been found at the slaughterhouse to have very pronounced tubercular disease of the udder.—(*La France Médicale*, 27th February, 1891.)

Children Inoculated with Koch's Lymph.—Of the many results published of the use of injections of Koch's lymph, not the least interesting are those by Jacobi, of New York, in the March issue of the *Archives of Pediatrics*. The details are there given of the cases of a number of children upon whom tuberculin had been tried, and the conclusions arrived at, so far, are in the main these:—Dr. Jacobi found in children, as well as in adults, that the diagnostic value of the fluid was not absolute; "At all events, when there is a certain percentage of cases which prove exceptions to the rules proposed by Robert Koch, much more experience will be required to determine whether there are circumstances amenable to either estimation or calculation which influence the availability of the lymph as a means of diagnosis." It was noticed that larger doses comparatively were borne by children than by adults, and, in connection with this apparent resisting power, reference is made to the infrequency of bad cases of typhoid fever in very young subjects, and to the relatively large doses of cardiac stimulants required by the young. "The therapeutic results of the lymph, in the cases reported thus far, are not at all striking. It is true most of them were very unfavourable cases, and that has to be taken into account."

Chronic Rheumatic Oedema.—In the Société Médicale des Hôpitaux (13th February, 1891), M. Desnos made a communication with reference to chronic rheumatic oedema, which he described as being "an affection little known and often unrecognised." He associated with it the swellings on the cranium occurring in connection with the arthritic diathesis, and also pseudo-lipomata found in the subclavicular region (described by M. Potain) and other parts of the body.

The oedema is characterised by the tough feeling it gives to the hand, suggesting a lipomatous or myxœdematous condition; but sometimes around the induration a more ordinary oedema exists, these differences being explained by supposing the fluid in the different parts to be infiltrated into different elements of the subcutaneous tissue. There is no change of colouration of the skin.

The oedema may coincide with the joint affection, or precede it, or follow it; and it may be a sequel to various nervous affections. Women are more liable to it than men.

One can be certain of the diagnosis only if all other causes of oedema can be shown to be absent, and if myxœdema and elephantiasis Arabum can be excluded. This is admittedly sometimes very difficult.—(*La France Médicale*, 20th February, 1891.)

Affections of the Respiratory System in Infancy and Childhood.—In the February number of the *Archives of Pediatrics* there is given the first of a series of papers on the "Affections of the Respiratory System in Infancy and Childhood," by Dr. Dorland, of Philadelphia. These are to be arranged in tabular form. In the present communication (of 12 pages) we have an account only of the various forms of acute rhinitis. These include (a) Acute Coryza; (b) Croupous Rhinitis; (c) Diphtheritic Rhinitis; (d) Hay Fever; and under each heading we have information as to derivation and synonyms in English and other languages. There are then given the definition of the particular affection (with varieties when there are any); its different predisposing and exciting causes; its pathology (macroscopic and

microscopic); its symptomatology in different stages; its duration and its prognosis. Any possible sequelæ are mentioned, and the treatment is fully considered under different headings, such as abortive treatment, and treatment of the attack, which may be hygienic, dietetic, climatic, local, or constitutional. Various formulæ are given, and some of these are rather complex; for example, one spray solution for the nostrils contains no fewer than *eleven* ingredients.

The points in the diagnosis of the various affections from one another are given in parallel columns. The following example may be quoted in full, as the discriminating between croupous and diphtheritic conditions in general is a question upon which considerable difference of opinion exists:—

“CROUPOUS RHINITIS.

1. Rarely attacks adults.
2. Of a sthenic type.
3. Febrile action marked.
4. Pulse usually strong and hard.
5. Constitutional involvement slight.
6. Slight enlargement of glands at angle of jaw.
7. Nasal discharge odorless, and containing fragments of false membrane.
8. Membranous formation clean, of a whitish colour, soft, friable, non-adherent, leaving mucous membrane beneath intact.
9. False membrane removed in small granular masses, and shows no evidence of necrotic processes.
10. Accompanied by membranous deposits upon the eyelids, which may be easily removed.
11. Complications and sequelæ slight.
12. Never followed by local paralysis.
13. Rarely fatal.”

“DIPHTHERITIC RHINITIS.

1. Frequently attacks adults.
2. Of an adynamic type.
3. Fever usually slight.
4. Pulse weak, rapid, and full.
5. Constitutional involvement profound.
6. Great enlargement of glands at angle of jaw.
7. Nasal discharge of a sweetish, unpleasant odor, and never containing fragments of false membrane.
8. Membranous formation dirty, of an ashy or gray colour, tough, dense, adherent, leaving mucous membrane beneath torn and abraded.
9. False membrane removed in one continuous piece, and shows marked evidences of necrosis.
10. Accompanied by membranous deposits upon the eyelids, which are impossible to remove.
11. Complications and sequelæ grave.
12. Frequently followed by paralysis of Eustachian tube and other local paralyses.
13. Frequently fatal.”

Hydronephrosis in a Unilateral Double Kidney.—Hr. Hochenegg submitted to the K. K. Gesellschaft der Aerzte in Wien, on 27th February, 1891, the account of a case of right-sided hydronephrosis, which he had had at different times under his observation, and which was admitted to hospital for radical treatment in November of last year. He had satisfied himself that normal urine flowed from the left ureter, and was proceeding to the operation of extirpation of the hydronephrotic sac, expecting that there would be only a small remnant of the original kidney. Instead, he found a unilateral double kidney, the relations of the two *pelvises* leaving no ground for doubting that this was the anatomical condition present. An elastic ligature was employed to separate the sac from the rest of the organ, and the parts were then stitched into the wound. The division by the ligature was complete in 21 days, and there was then left a urinary fistula. On an elastic catheter being introduced by the fistula urine escaped by it and *not* by the urethra; but when the fistula was covered up the urine ceased to come by the fistula, and escaped (without the quantity varying) by the normal passage. By injection of coloured fluid into the fistula it was shown that no communication existed between the hiluses of the two kidneys. The conclusion arrived at by Hochenegg, in explanation of these facts, is that, when the fistula is closed, the secretion

through the hydronephrotic kidney ceases, the normal kidney acting; and that, when the fistula is opened again, some conditions must be present which arrest the secretion by the normal kidney. The urine which escapes by the fistula differs in composition from that escaping at other times from the urethra.—(*Deut. Med. Zeitung*, 5th March, 1891.)

An Unusual Form of Obstruction of the Bowels.—Three cases of intestinal obstruction, which ended fatally, were related by Hr. Kundrat to the K. K. Gesellschaft der Aerzte in Wien, in which the obstruction was shown *post mortem* to be caused by the root of the mesentery lying across the jejunal extremity of the duodenum. In all three the closure of the duodenum in this way was complete. Distension of the duodenum, dragging downwards of the remainder of the small intestine, sudden contraction of the bowels, and a relaxed condition of the abdominal walls are mentioned as factors in the etiology. No disturbances of the circulation had occurred in the parts affected, and the suddenness of the deaths is explained as being possibly due to reflex paralysis of the vagus, or of the heart. Another theory is suggested by Kundrat—namely, that in the distended stomach and duodenum ptomaines may have been formed and absorbed. This theory, he considers, is supported by certain changes, found at the autopsies, similar to those found in cases of cholera; the cellular tissue and muscles were abnormally dry; the serous membranes were covered with a sticky fluid; cadaveric rigidity was very well marked.

The only feasible surgical treatment in such cases is said to be the performance of gastro-enterostomy.—(*Deut. Med. Zeitung*, 19th February, 1891.)

PATHOLOGY AND BACTERIOLOGY.

By R. M. BUCHANAN, M.B., C.M.

Anæmic Necrosis of the Renal Epithelium. By Dr. Oscar Israel, Berlin (*Virch. Arch.*, Band 123, Heft 2).—Dr. Israel reviews at some length the whole question of coagulation necrosis, and relates the results of an experimental investigation of the process. Besides the macroscopic characters, the conditions upon which the diagnosis of coagulation necrosis are at present based are the coagulation of the cell protoplasm and the subsequent disappearance of the nucleus. The disappearance of the nucleus is said by Arnheim to be due to solution of its chromatic substance, and Dr. Israel maintains that the cell protoplasm likewise also undergoes a process of solution rather than of coagulation.

The kidney was chosen as the organ offering the best conditions for the inquiry, because of the uniformity in the size and arrangement of the cells. The circulation was temporarily obstructed in a branch of the renal artery for a length of time sufficient to cause necrosis of the epithelium. For this purpose three to four hours sufficed, and the kidney was thereafter extirpated for microscopic examination in from one hour to eight days. It happened that, even when the renal artery itself was compressed three or four hours, not all the epithelium died, but only certain areas. The majority of the necrotic areas were usually to be found on the cortex, and the effect was as great with two hours anæmia as with four, though the extension of the areas was perhaps not so great. The change produced such contrast between the affected and non-affected tubules that individual tubules could be traced in their whole course. A series of changes were observed in the epithelium. At the end of twenty-four hours the nuclei had already disappeared in specimens prepared by ordinary methods. By a special method (Altmann) of fixing the tissue, however, they remained distinctly visible, but quite homogeneous, and reduced to half their normal size. The cell body also was greatly diminished in size, and the deeply stained granules of Altmann (*Die Elementärorganismen der Zellen*, Leipzig, 1890), instead of being arranged in parallel rows perpendicular

to the basement membrane, appeared huddled together. In consequence, the lumen of the tubule became greatly widened, or was filled with epithelial cells which had become detached. The granules at the same time increased in size and diminished in number, until they disappeared altogether. Calcification began to appear in the cells twenty-four hours after necrosis.

Another phenomenon observed in the first twenty-four hours was the formation of fibrine (in necrosed areas) in the form of a fine network in the convoluted tubules, and in solid cylinders in the straight tubules. When the tubule loses its epithelium, or when the cells become loosened from the basement membrane, there is no further obstruction to the entrance of lymph into the tubule, where the conditions are favourable for the formation of fibrine. These cylinders of fibrine are regarded as analogous to tube casts.

A Case of Trismus and Tetanus Neonatorum. Adolf Baginsky and Kitasato (*Berlin Klin. Woch.*, 16th February, 1891).—In connection with this case we have a demonstration of the identity of trismus or tetanus neonatorum with tetanus of adults from an etiological point of view. The child began to show the characteristic symptoms when 8 days old, and was brought under the care of Dr. Baginsky on the following day. Having no hope of recovery taking place from administration of the usual remedies, he resolved to place the little patient under the care of Dr. Kitasato, in the hope that the disease might be arrested by injections of the blood serum of an animal rendered immune to tetanus. (In the *Deutsche Medicinische Wochenschrift* of 4th and 11th December, 1890, Behring and Kitasato published an account of experiments whereby they had produced immunity in animals against, and had cured animals already suffering from, tetanus.) The treatment, however, was without avail, death taking place on the sixth day of the illness. The *post-mortem* examination showed no suppuration in the umbilicus, nothing of note in the umbilical vessels, and no change in the peritoneum.

Dr. Kitasato made cultures from the serous fluid found in the umbilicus (on the second day of the illness). In two days various species of bacteria had grown, and by the aid of the microscope the bacillus of tetanus was detected amongst them. Two mice were inoculated with the culture, and the inoculation was followed by the typical symptoms of tetanus after twenty hours, and by death at the end of thirty hours. Suppuration occurred at the place of inoculation, and the microscope showed the tetanus bacillus in the pus.

From the original culture the bacillus was isolated by means of plate cultures. Inoculations of the pure cultures so obtained produced tetanus.

Puerperal Eclampsia. Dr. Alexander Favre, Berlin (*Virch. Arch.*, Band 123, Heft 2).—This paper is a preliminary communication on an experimental (bacteriological) examination of the question of puerperal eclampsia. Dr. Favre made cultures from white infarctions in the placenta of a case of eclampsia, and isolated a micrococcus measuring 0.7 to 0.8 μ , and forming small translucent colonies on agar or gelatine. This organism, designated "*micrococcus eclampsiae*," was found to be capable of producing slight inflammatory phenomena in the kidneys of rabbits. The procedure of the investigation is divided into five categories:—

1. Injections of these cultures into the circulation of healthy rabbits produced very frequent oscillations of temperature—mainly lowering of same.

2. Injections of pure cultures of this organism into the circulation of double nephrectomized rabbits caused somewhat rapid death, the animal showing anxiety, restlessness, desire to escape, general weakening of muscles, and collapse temperature, but no convulsions.

3. Injections of older pure cultures into the circulation of single nephrectomized rabbits had, as a regular result, the somewhat rapid death of the animal, with the same complex symptoms as above, also without convulsions.

4. Injections of younger pure cultures into the circulation of single nephrectomized rabbits produced, as a regular result in five rabbits, after some duration of the symptoms above enumerated, violent clonic convulsions, especially of

the anterior extremities. Soon thereafter followed regular, not less violent, tetanic convulsions, especially of the muscles of the back, face, and ears. After two or three such attacks the animals died.

5. Two double nephrectomized healthy rabbits died after an illness of forty-eight to fifty-six hours with collapse temperatures and uræmia.

It is probable, therefore, that this micrococcus can induce a nephritis gravidarum as well as an attack of eclampsia. Two cases of eclampsia were examined, and great analogy existed between the organism found in them and that of the above experiments.

On Roman Malarial Fever, especially in Summer and Autumn. A. Celli, E. Marchiafava, and Weyl (*Berlin Klin. Woch.*, 3rd November, 1890). — It has been fairly well proved that the infection of malaria consists in a specific parasite which has made its way into the red blood corpuscles, lives in them and upon them, changes their hæmoglobin into melanin, and develops itself by fission; and Golgi has made out a relation between the fever curve and the various life stages of the parasites, and has also found that the parasite of quartan fever is distinguished morphologically and biologically from that of tertian.

It is well known that the summer and autumn fever differs widely from the spring malaria. The spring fever is always cyclic (quotidian, tertian, &c.), never pernicious, is curable nearly always without quinine, and is always curable by it. The summer and autumn fever is of a far more serious nature. Its onsets are mostly daily, and last so long that pyrexia and apyrexia tread so closely on each other as to be indistinguishable.

In *pernicious* cases, in which the central nervous system seems chiefly affected, the fever is almost continuous. There may be no initial rigour, the cure is hardly ever spontaneous, and quinine is not so certain in its action as in the spring fever. The frequency of return, the anæmia, the bad after results, and the cases, not unfrequent, of *febris perniciosa larvata*, characterised by a very slightly heightened or even sub-normal temperature, are all definite points of difference between the two sets of maladies.

One would naturally expect to find the explanation of the difference in the nature of the parasites, and this is the case to some extent. In the summer and autumn fever, in well-marked cases tending to become pernicious, the parasites were small amœboid creatures within the blood corpuscles. These small plasmodia ("piccoli plasmodi"), as they have been named, have either a short stage of development without getting pigmented, or a longer stage when they become pigmented. In the spring fever, the parasites also within the blood corpuscles, differ in being large and pigmented. These cause, according to Golgi, the tertian and quartan fevers and their compounds, and they are found only in fixed districts and in slight cases of malaria. Thus "different seasons of the year, different districts of the country, and finally, slight or severe forms of fever, mean different parasites."

Apart from this conclusion, the paper contains many other points of interest. The half-moon or sickle-shaped parasite of Laveran, which he considered an independent characteristic parasite, is considered only as one of the later stages in the development of the amœboid forms in summer and autumn malaria. Several considerations led to this conclusion. An examination of the living blood in the skin, lungs, and spleen, points in this direction. Then, when blood containing the sickle forms above was injected, the blood of the patient experimented on showed not half-moon parasites, but "amœboid forms." Only in this case the amœboid forms had previously been observed in the blood of the subject. This fact rather vitiates the experiment, which should be repeated in more favourable circumstances. Laveran considered the sickle-shaped parasite characteristic of *pernicious* malaria; but cases of *pernicious* malaria occur without it, and it has been discovered in cases where the *pernicious* character was vanishing. Further, parasites have been found forming a connecting link between the *plasmodia* and sickle-shaped germs. Particularly interesting are the researches in the "small plasmodia" regarding

the rather puzzling stage of spore formation. Blood drawn from the skin, *e.g.*, finger tips, was of little service. It gave no formation, whilst blood from the internal organs, spleen, or brain—the last after death—showed the process of spore formation. In the “spring fever,” blood drawn from the finger showed all the stages.—(W. A. Stewart, in *Med. Chron.*, December, 1890.)

On the Parasitism of Certain Pathogenic Organisms upon Living Plants: a preliminary communication from the Laboratory for General Pathology at Kiev. By Th. J. Lominski (*Wratsch*, 1890, No. 6).—It is well known that plants are affected with various bacterial diseases; but of the action upon them of the microbes that are pathogenic to men and animals we know almost nothing. Numerous observers, such as Buchner, Lehmann, Fernbach, Miquel, Grancher, and Deschamps, have ever agreed unanimously in the opinion that the green vegetables, seeds, and especially growing plants, cannot contain them. Their conclusions have been by the author brought to the test of experiments. He experimented with the *staphylococcus pyogenes aureus*, and the bacilli of enteric fever and splenic fever; the plants experimented upon were chiefly wheat and agapanthus, but also buckwheat, clover, elder, hyacinths, and tulips. He has made altogether about 300 observations, some by inoculation, chiefly upon the leaves, and others by endeavouring to grow seeds (grain) upon infected soils, such as garden soil, wet wadding, and especially upon boiled potatoes, with the addition of the necessary salts in solution. His results are not without important bearings upon the etiology of the diseases caused by the micro-organisms used. They are as follows:—

Pathogenic organisms can find in the tissues of living plants of the higher orders the conditions necessary for their existence. Once they have gained admission through a breach of surface of stem or leaf, they can multiply and form colonies within the tissues; but they cannot penetrate uninjured epidermis. When artificially inoculated, all these three micro-organisms not only multiply at the site of inoculation, but they grow out through all the tissues around, though they certainly do not grow very far or become disseminated through the whole plant or even through the whole of the organ or special part inoculated. The affected part of a leaf can be distinguished from the rest by the eye, being of a lighter green. After inoculation with *bacillus prodigiosus*, brick-red spots and streaks indicate clearly the extent to which the multiplying microbes have spread.

In the leaves the pathogenic microbes grew out into the intercellular spaces. The range of growth seemed to be in inverse ratio to the size of the micro-organism employed, so that *staphylococci* extended much further than the bacilli of splenic fever. The motility of the microbes did not apparently aid their dissemination; at least it was not observed that the enteric bacilli had grown out any further than the *staphylococci*.

The cell membrane is not an absolute barrier to the entrance of microbes. The protoplasm forms a cultivating medium for them, and they settle readily in dead, but still moist cells, and less readily in living ones. Dead and dried-up cells afford them no nourishment.

By buds growing out from an infected area, the bacteria can be carried mechanically out into the air. They can penetrate the tissues of the roots of wheat in immense numbers, but do not, as has already been indicated, spread thence to stem or leaves. If the soil was infected with a mixture of the three microbes especially used, all three were found in the roots in such number that even from their bulk growth was modified.

Turning now to the fate of the bacteria themselves, it was found that after inoculation into a leaf the enteric bacilli multiplied, but only during the first day, and then gradually died. They lost their power of taking stains (by Löffler's and Ziehl's methods at least), underwent a granular degeneration, and failed to grow when transferred to other media.

The *S. pyogenes aureus* grew the most energetically in leaves. Even after 32 days, particles transferred from the infected leaf to potato, or meat-peptone-gelatine, produced typical pure cultivations.

The bacilli of splenic fever showed, during the first day after inoculation into an agapanthus leaf, unusually energetic growth, and grew out in long threads. Towards the end of the first week a tendency to spore formation could be seen, and it gradually went on. On the eighteenth day the author found a large amount of sporogenic and asporogenic threads and free spores, not only in the inoculation canal in the tissues, but also between the healthy cells of the spongy leaf tissue, and in the cells themselves, and in the scar on the surface of the leaf. At this time the threads react variously to staining with gentian violet; some colour well, others do not, but do with carmine, which shows the contained glancing spores very well; others again colour only partially, or even not at all, but retain the appearance of clear, pale threads. In preparations made on the forty-second day, there was still an abundant mass of mingled vegetating forms with free spores and sporogenic threads. Pieces of the infected leaves removed at any time between the sixteenth and forty-second days, gave rich typical pure cultivations on potato and meat-peptone-gelatine, and produced typical fatal disease when inoculated in mice.

In one agapanthus leaf, on the twenty-sixth day after inoculation, the author found splenic fever rods and threads which had undergone marked changes. Unstained preparations showed the threads light yellow in colour, instead of clear and glancing, and increased in thickness by two or three times. They were no longer regular in outline, but uneven, notched, corroded-looking. Some of them were interwoven or clinging together in bundles, often mingled with normal forms. At first sight they looked as if they had been macerated by salts present in the tissues; but experiments with nitrates, chlorides, and sulphates gave negative results. Only with nitrates was the yellow colour slightly intensified. Staining with gentian violet showed that the altered appearance was due to thickening and degeneration of the outer portion of the substance of the threads, for this portion remained unstained, surrounding a well-defined and intensely coloured central thin rod. In a few preparations there were bacilli, unaltered in outline, which did not take the stain at all. — (*Centrabl. f. Chir.*, 14th January, 1890.)—D. M'P.

Books, Pamphlets, &c., Received.

- Materia Medica and Therapeutics, by J. Mitchell Bruce, M.A., M.D.
London: Cassell & Co. 1891.
- A Manual of Diseases of the Nose and Throat, by Procter S. Hutchinson, M.R.C.S. With Illustrations. London: H. K. Lewis. 1891.
- The Comparative Climatology of London, by Bertram Thornton, M.R.C.S. London: H. K. Lewis. 1891.
- Elements of Practical Medicine, by Alfred H. Carter, M.D. Sixth Edition. London: H. K. Lewis. 1891.
- Des Résultats Immédiats et Éloignés du Traitement Électrique des Fibromes Utérines par la Méthode du Docteur Apostoli, par Mlle. Félicia Jakubowska, Docteur en Médecine. Paris: Octave Doin. 1890.
- Collected Contributions on Digestion and Diet, by Sir William Roberts, M.D., F.R.S. London: Smith, Elder & Co. 1891.
- The Watering Places of the Vosges, by Henry W. Wolff, with a Map. London: Longmans, Green & Co. 1891.

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ORIGINAL ARTICLES.

THE PATHOLOGY OF MEDIASTINAL TUMOURS, WITH
SPECIAL REFERENCE TO CLINICAL DIAGNOSIS.*

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INTRODUCTORY—HISTORICAL AND LITERARY.

It is somewhat difficult to know how best to proceed in discussing the subject of tumours of the mediastinum, mainly for the reason that, as yet, we have arrived at no fixed or definite principles of classification, such as we find so useful in the study of the tumour-formations of other organs and regions of the body, and, therefore, in the present investigation, we must, as far as possible, endeavour to map out a plan of classification for ourselves. It was in the hope that the cases to be related in these pages, and the reflections to which they give rise, might be of some little service in enabling us to establish nosological and diagnostic principles,

* This and the following papers give the substance of a course of Post-graduate Lectures, delivered in the Glasgow Royal Infirmary in Autumn, 1890. The specimens from the cases, which are related in full, were demonstrated at the meetings of the class; and the collection of specimens in the Infirmary Museum was also made use of to illustrate the facts and opinions stated in the Lectures. My own preparations and dissections now form a part of the Royal Infirmary Museum.

that I decided to bring them under the notice of the Gentlemen who attended the Post-graduate Course, held in Glasgow in the autumn of 1890. It has been a matter of no little difficulty with me how to proceed in recording the cases to be demonstrated—whether to consign them to an appendix, or to embody them in the text of this essay. The former plan would be the easier, but the latter, I think, would be the more serviceable, and shall therefore be adopted. With regard to the general arrangement of the subject matter, I propose, in the first place, to give a brief historical and literary sketch, after which the pathology, etiology, and diagnosis of mediastinal tumours will be discussed in detail.

At this point, also, it may be well to remember that the essay deals only with those tumours of the mediastinum which are to be regarded as new-growths or neoplasms, including under this category such solid new-formations as may be syphilitic, tubercular, or glandular in origin. Simple inflammatory conditions of the mediastinum (*e.g.*, Abscess), aneurism, and hydatid and dermoid cysts are not included within the range of our present subject, except in so far as they may be incidentally considered under the heading of diagnosis. I may also add that I accept the old anatomical division of the mediastinal space into anterior, middle, and posterior in preference to any more complicated topography, and this description of the mediastinum, with the contents of each of its regions, is so well known to all that I need not further allude to it.

In the preparation of my cases for publication, one of the first works to attract my attention was the excellent monograph on affections of the mediastinum, by Dr. Hobart Amory Hare of the University of Pennsylvania,* a work involving an enormous amount of labour, and including a much wider range of diseases than those with which we have at present to deal. The reader feels somewhat amazed at the persevering labour which has sought out from medical literature the clinical histories of 520 cases of mediastinal disease, but, at the same time, he begins to wonder whether the absolute or intrinsic value of some of the results arrived at are commensurate with the enormous labour involved. I am afraid not. An enormous series of cases like this, from all sources, and extending over a long period of years, would require the

* *The Pathology, Clinical History, and Diagnosis of Affections of the Mediastinum, other than those of the Heart and Aorta, with Tables of 520 Cases* (Philadelphia, 1889).

most careful scrutiny and assortment before anything like certainty of conclusion could be arrived at with regard to many of the points at issue. For example, we might quite legitimately raise the question whether cancer is the most frequent form of tumour occurring primarily in the mediastinum, and we do not think that the collection of cases given by the author at all necessarily proves it to be so. Twenty or thirty years ago many morbid growths were called cancer which now would be classed in a quite different category, and, bearing this in mind, we rapidly glanced through the table of 134 cases of cancer to see how many had been recorded in 1870 or before it. To our surprise, we found that no less than 67, or half the total number, had been recorded at or before this date. If we were to investigate the dates of those cases to which reference is made by giving the number of a series of volumes of transactions, without stating the year, this number might possibly be increased. Looking through the cases of sarcoma, we find that out of 98 cases tabulated only 7 are recorded as having occurred in 1870 or before it. The contrast is certainly suggestive, and proves, we think, the necessity of eliminating this source of error before attempting to make any definite statement as to the relative frequency of cancer and sarcoma in the mediastinum. Then, again, it is also absolutely necessary, in arriving at a conclusion as to the frequency of different neoplasms in the mediastinum, to distinguish between primary and secondary formations. But how is this possible in a series of 134 cases of cancer, where at least 56 of the whole give no information whatever as to the primary seat of the tumour? Secondary tumours of the mediastinum are of no more importance in a scientific study of the primary growths of that region than is a secondary nodule in the liver in the investigation of the nature and cause of malignant tumours of the gastro-intestinal tract. While, therefore, I cannot agree with many of the conclusions at which Hare has arrived, I must add that from a bibliographical point of view his book is one of the most important on this subject that has as yet appeared.

Another most valuable, though much older book, from a historical and bibliographical point of view, is that of Dr. John Cockle, which was published in 1865.* This book constitutes a most interesting and readable epitome of the literature of the subject previous to the date at which it appeared, but it deals with mediastinal tumours more in their relationships to the lungs than to the mediastinum *per se*.

* *On Intra-thoracic Cancer* (London, 1865).

With regard to the historical aspect of our knowledge of mediastinal new-growths, there is not a great deal to be said. All the older medical writers have described cases of new-growths filling the cavity of the chest, but have referred to them rather as pathological curiosities than as diseases falling within the scope of our diagnostic powers. Cases are to be found in the writings of Bonetus, Morgagni, and others, and it may perhaps not be out of place here to refer briefly to a most interesting case recorded by an English physician of the seventeenth century—Dr. Thomas Willis.* This was the case of the Rev. Dr. Berwick who, for fifteen years in all, now better and now worse, had suffered from cough, hæmoptysis, and very “stinking” breath. When the body of this divine came to a *post-mortem* examination, the circumstance that caused Dr. Willis great surprise and difficulty was that “there was no collection of any filth or stinking and putrid matter, nor any cavity in the lungs made by an ulcer or wound,” to account for the “grievous breath, stinking like hell, . . . but only one lobe of this bowel, or rather the whole left side, was so hardened from a scirrhus tumour,” &c. Dr. Willis then goes on to show that the sulphureous particles in the blood mixing with the fixed salts in the diseased part must have given rise to the stinking odour of the breath; and, by way of analogy, quotes chemical experiments in support of his opinion. This account strikes us as being one of the best of the earlier English descriptions of a case of cancer of the lung.

Till the time of Bayle and Laennec, however, the possibility of diagnosing primary growths of the mediastinum during life was not seriously entertained, and even long after Laennec we find Stokes† admitting that nothing had been done to establish diagnosis of cancer of the lung, although Laennec had stated that “the stethoscope ought to detect its existence.” In Voigtel’s‡ work on pathological anatomy, published in 1804, we find that the characters of tumours of the lung and chest are well described, and that numerous references to recorded cases are given. In the book of this early German writer on pathology there occurs a sentence on malignant disease of the lung which is well worthy of being quoted to-day when the early period at which it was

* *Pharmaceutice Rationalis*, &c. (London, 1679), part ii, page 58.

† *A Treatise on the Diagnosis and Treatment of Diseases of the Chest*, Part I: Diseases of the Lung and Windpipe (Dublin, 1837), page 370.

‡ *Handbuch der Pathologischen Anatomie* (Halle, 1804), vol. ii, sect. ix, pages 269-272.

written is taken into consideration. "The scirrhus nodules (*scirrhen*)," he writes, "were mostly (if one really found them in the lung, and was not deceived) not, indeed, a degeneration of the lung itself, *but rather of the glands of the lung and the branches of the bronchi.*" I have placed what I consider to be the important and suggestive words of this sentence in italics. The work of Bayle* is important because, in his classification of phthisis, he recognises a "cancerous phthisis," of which, however, only three cases were observed in 900 *post-mortems* on cases of phthisis. Of course we do not now recognise "cancerous phthisis" as a variety of pulmonary consumption in the modern conception of this disease, but one or two of Bayle's remarks on cancer of the lung are worth quoting from a historical standpoint. He says—"Such phthisical persons are always more than thirty years of age, and most of them have cancerous tumours not only in the lungs, but also at the surface of the body, or in the liver, or the stomach. . . . In these cases it is evident that the cancerous phthisis is really no more than the effect of the general cancerous diathesis." The obvious bearing of these remarks of the great French physician upon the pathology and life history of pulmonary cancer is quite apparent.

Since the time of Lænnec, John Sims,† and Stokes the diagnosis of mediastinal new-growths during life has gradually been placed on a more secure footing, so that now it is quite possible to arrive at a tolerably accurate knowledge of these affections before death takes place. It is to be noted, however, that the value of physical signs in the determination of the diagnosis does not hold nearly so important a place as in the other more common affections of the chest—in fact, the physical signs of mediastinal tumour taken by themselves are often obscure and misleading to a degree, as one of the cases I shall very shortly have to relate proves. Indeed, it is only by taking into account the entire pathology and symptomatology of the disease, as well as its physical signs, that we can finally arrive at a definite and reliable conclusion. Here it is, then, that pathology has played such an important part in strengthening the hands of the physician in the practice of his art; and in perhaps no department of medicine has the value of the accurate pathological and clinical observations of the last twenty-five years been more apparent

* *Researches on Pulmonary Phthisis*, from the French of G. L. Bayle, by William Barrow, M.D. (Liverpool, 1815), page 36.

† *Medico-Chirurgical Transactions* (London), vol. xvii, part i, p. 280.

than in the great advance we have made during that period in our powers of diagnosis in cases of mediastinal disease.

PATHOLOGY AND ETIOLOGY OF MEDIASTINAL TUMOURS.

In discussing this part of our subject, it is first of all necessary to formulate a classification of the different new-growths which may be met with in the mediastinum, and this, owing to the confusion that has hitherto prevailed in reference to some of the varieties of intra-thoracic new-growths, is by no means an easy thing to do. The question at once arises, are there any forms of tumour which may be regarded as more or less special to the mediastinum? I believe that the variety of tumour which we have been accustomed to designate lympho-sarcoma is the one which is most likely to occur in the mediastinum. But when such a statement has been made we are brought face to face with a very serious difficulty—a difficulty in which has originated much of the confusion that still obscures our knowledge of the intimate pathology of the class of tumours which we are now studying. I would not be presumptuous enough to say that I can remove this difficulty, but during my recent observations and studies it seems to me that I have been able to arrive at clearer views, which I shall endeavour to unfold for general consideration and criticism. The difficulty to which I have referred is the relationship which lympho-sarcoma of the mediastinum bears to lymphadenoma, or, as I would very much prefer to call it, Hodgkin's disease. I cannot help thinking that much of the confusion with regard to this subject is really to be traced to Virchow who, in his celebrated book on tumours,* has treated of these two affections as if they were really one and the same. The influence of the great pathologist's authority is traceable, I think, in most of the subsequent writings on mediastinal tumour, and even in the writings of Hilton Fagge† the impress of the "*Krankhaften Geschwülste*" is plainly visible. I shall, however, immediately return to the discussion of this question, and in the meantime I wish to formulate the classification to be followed in the present essay.

Tumours of the mediastinum may be classed under one or other of the following groups:—

* *Die Krankhaften Geschwülste*, (Berlin 1864-65), vol. ii, p. 733, *et seq.*

† *The Principles and Practice of Medicine*, second edition, vol i, p. 998.

I. Sarcoma and Lympho-sarcoma of the Mediastinum.

Under this heading I shall discuss the relationship of primary intra-thoracic sarcomatous tumours to Hodgkin's disease.

II. Cancer of the Mediastinum.

III. Fibroma of the Mediastinum. Under this head I shall discuss the relationship of this form of mediastinal tumour to the rheumatic diathesis.

IV. Tubercular and other Specific New-growths of the Mediastinum.

V. Miscellaneous Tumours of the Mediastinum.

I. Sarcoma and Lympho-sarcoma of the Mediastinum.

—Are all tumours of the mediastinum, presenting a lympho-sarcomatous structure, to be regarded as examples, or at least modifications, of Hodgkin's disease? I think not; and this opinion is chiefly based upon my understanding of what Hodgkin* himself wrote in his original paper on the subject, and also on the independent communication of Dr. Samuel Wilks,† dealing with the same morbid process. We may have lympho-sarcomatous tumours occurring in the chest which are in no way related to Hodgkin's disease; and all such names as pseudo-lenkæmia, adenia, malignant lymphadenoma, &c., when employed with special reference to primary intra-thoracic tumours, are apt to be highly misleading, and are based upon erroneous notions as to the pathology both of Hodgkin's disease on the one hand, and sarcomatous formations in the mediastinum on the other. I do not mean to say that Hodgkin's disease may not begin in the mediastinal glands, just as it may begin in any other glands—*e.g.*, those of the neck, groins, or axillæ. When this is so, however, we are not dealing with a primary new-growth, in the first instance, strictly localised in the mediastinum, but with a general morbid state of the lymphatic glands, whose origin in those of the chest must be looked upon as more or less accidental. There has of recent years been too great a tendency to search for some relationship between mediastinal tumours and Hodgkin's disease, when in reality there was no need to do so, and when the effort to demonstrate a connection simply led to the formation of erroneous views. The fact that very many, though not all, of the sarcomatous tumours, and especially those

* *Medico-Chirurgical Transactions* (London, 1832), vol. xvii, page 68, *et seq.*

† *Guy's Hospital Report*, Third Series, vol. ii, page 128, *et seq.*

which are well designated lympho-sarcoma, occurring within the thorax originate in connection with the mediastinal glands, has led many to relate them in some way or other to Hodgkin's disease; but, unless we can demonstrate in an unmistakable way the presence of the other typical features of the latter affection, I hold that it is erroneous to do so. The chief phenomena of the disease of the lymphatic glands, which Hodgkin described, are great anæmia and dropsy, enlargement of all the lymphatic glands of the body, and in many, though not in all, a peculiar deposit in the spleen. Perhaps, in order to make this plain, I cannot do better than quote a few sentences from his paper. All his "cases agree in the remarkable enlargement of the absorbent glands accompanying the larger arteries; mainly the glandulæ concatenatæ in the neck, the axillary and inguinal glands, and those accompanying the aorta in the thorax and abdomen." The "enlargement of glands appeared to be a primitive affection of these bodies rather than the result of an irritation propagated to them." Any scrofulous condition is regarded as an "accidental concomitant to the idiopathic interstitial enlargement of the absorbent glandular structure throughout the body;" and the affection is not to be looked upon as inflammatory in the usual acceptation of that term. The spleen in his cases was "thickly pervaded with defined bodies of various sizes, in structure resembling that of the diseased glands." The deposits in the spleen he regards as "a posterior effect, and on this account may not always have been produced." Here, then, we have a perfectly well defined general morbid state, which is in no way specially related to primary tumour formations of the mediastinum, to those at least which throughout remain confined to this region of the body. All subsequent descriptions of the affection are based on Hodgkin's original statements, and in proof of this I would refer you to the definition of the disease as given in Gower's excellent article in Reynolds' medicine.* Even in this article, however, scientific and comprehensive as it undoubtedly is in every sense, we meet with evidence of the nosological difficulty, which most physicians have experienced. His division of the varieties of the disease into (1) local, (2) local enlargement preponderating, and (3) general uniform enlargement, is scarcely logical, especially when we consider that in his definition the term "lymphadenosis," on his own showing, implies a general disease. This view of his division of the varieties of

* *A System of Medicine* (London, 1879), vol. v, page 306.

Hodgkin's disease is also supported by the circumstance that in his section on differential diagnosis he finds it necessary to distinguish between lymphadenosis and "local gland lymphoma." All this goes, I think, to prove that anything in the nature of a mediastinal tumour which can be regarded as essentially a local manifestation, whether liable to metastasis or not, can have no relationship to Hodgkin's disease.

Hare* is certainly to be credited with an endeavour to arrive at a true nosological classification of mediastinal growths, when he places the lympho-sarcomata of that region in his tabular list of sarcomata; but I am decidedly of opinion that a number of his cases of lymphoma and lymphadenomata might also with perfect accuracy have been relegated to the same table. I cannot help thinking, however, that his attempt to distinguish between lymphadenoma and lymphoma as separate growths is somewhat confusing.

In concluding this part of our argument, I would like also to remark that the fact of certain other lymphatic glands being affected in a case of mediastinal lympho-sarcoma need not at all be regarded as pointing to any relationship to Hodgkin's disease. With an enormous mass in the mediastinum pressing more or less upon the main lymphatic channels, at or near the points where they pass into the venous system, we need not wonder if a number of the lymphatic glands become enlarged. But this, indeed, is a very different thing from a general morbid process affecting all the lymphatic glands of the body altogether independently of any secondary pressure effects.

It will now be proper that I should describe the specimens from, and relate the clinical histories of two cases of lympho-sarcoma of the mediastinum which I have myself dissected, and with reference to one of which the patient was also under my professional observation during life in consultation with two medical friends. Having done this, I propose in the next place to relate the clinical history of what I consider to have been a typical case of Hodgkin's disease, which was under my care in the wards of the Royal Infirmary two or three years ago, and which terminated fatally, although, unfortunately, no *post-mortem* examination was possible.

CASE 1. *Lympho-sarcoma of the Mediastinum involving the Left Bronchus and Lung, with severe Pericarditis and Secondary Nodules in the Spleen, Kidneys, and Abdominal*

* *Loc. cit.*, p. 71, 72.

Lymphatic Glands.—Mrs. C. was admitted to Ward VIII of the Glasgow Royal Infirmary, under the care of Dr. Wallace Anderson, on the 12th July, 1889, and the *post-mortem* was performed on the 20th September, 1889.

Summary of Clinical History.—The patient, a housewife, aged 55, complained of pains disseminated over the whole body, but specially severe in the epigastrium and right shoulder, of about three weeks' duration. The pain first commenced in her back, and her urine became "like blood;" she also suffered from headache and vomiting; the abdominal pain was liable to be brought on by taking food, being relieved when vomiting took place, and on one occasion she vomited a considerable quantity of blood. Before her admission to hospital her symptoms were attributed to "inflammation of the kidneys." The liver was tender on pressure, but was not obviously enlarged, the dulness in the nipple line measuring $4\frac{1}{2}$ inches. There was general abdominal tenderness. Over the whole of the left lung anteriorly and posteriorly there was complete dulness, with diminished movement and increased vocal fremitus and vocal resonance. The dulness was most marked in front, and the breathing was highly tubular. The heart sounds were normal. The urine contained no albumen, but abundant lithates. During residence in hospital a glandular swelling appeared above the left clavicle, and also at the right angle of the lower jaw. For several days before death the patient was comatose.

Post-mortem Examination.—There is slight jaundice of the skin and conjunctivæ; the body is well nourished, and there is much subcutaneous fat.

Chest.—A firm irregularly shaped tumour occupies the mediastinum, reaching to a little above the episternal notch in the middle line, and extending downwards to about the middle of the pericardium, to which and to the great vessels emerging from it it is firmly adherent. An offshoot from the growth extends beneath the left clavicle to within two inches of the tip of the left shoulder, and the glands on each side of the neck in front of the sterno-mastoids are enlarged. The tumour is firm to the touch, irregularly lobulated, and covered by a dense fibrous tissue; its cut surface is rather friable, and of a yellowish-white colour; and minute hæmorrhages are scattered through its substance. The left pleural cavity contains a considerable quantity of blood and bile-stained serum, and the left lung has been much compressed by the fluid. The right lung is normal, and there are no adhesions on either side.

The entire tumour and the heart, with the pericardium unopened, are removed for more detailed examination and dissection.

Abdomen.—The peritoneal cavity contains between three and four pints of fluid, deeply stained with bile and blood. A mass of enlarged glands are found in the neighbourhood of the duodenum and the portal fissure, causing some matting of the organs in this region. The mucous surfaces of the stomach and duodenum are quite healthy. The gall-bladder is distended, and on slitting up the duct from the hepatic papilla in the duodenum, it is found to be somewhat constricted near its middle point by the pressure of one of the enlarged glands. The gall-bladder contains about 2 oz. of a dark viscid fluid. The liver is bile-stained and slightly hyperæmic, but is not otherwise abnormal.

The spleen is the seat of several hard round nodules, which can be easily felt, and a small growth is also present in the pelvis of the left kidney. The kidneys and spleen are reserved for more minute examination.

Dissection of the Tumour.—During winter session 1889-90 I undertook the dissection and examination of the tumour, which now forms one of the preparations contained in our museum.* The pericardium is found to be the seat of a most intense generalised pericarditis, with very abundant blood-stained fibrinous exudation on both surfaces. The exudation is most abundant over the left ventricle, and especially in the neighbourhood of the auriculo-ventricular groove. On cutting into the organ the muscular tissue is seen to present a normal appearance, and the valvular structures are found to be healthy. It is to be noted, however, that the surface fat is very greatly exaggerated.

The whole of the upper portion of the anterior, middle, and posterior mediastinum is the seat of a bulky lobulated mass, which apparently is composed of agglomerated glands. In addition to the mass occupying the mediastinum, there is also a smaller lobulated tumour which has been situated in the root of the neck to the left side of the trachea, and which reaches to about the level of the lower margin of the larynx. In consistence the tissue of the neoplasm is exceedingly soft, the term encephaloid describing its naked eye characters well. On dissecting the preparation, so as to make out its relationships to neighbouring parts, the following facts are discovered:—The gullet is firmly adherent to the posterior surface of the growth, but is not otherwise involved. The trachea occupies

* Glasgow Royal Infirmary Museum, Series X, 234A.

a deep groove in its posterior wall, but can be dissected away from it in its whole extent, as far as the entrance of the left bronchus into the lung. At this point the wall of the bronchus is very seriously encroached on by the tumour tissue which is extending inwards upon the lung. The left pneumogastric nerve can be dissected easily from the posterior surface, and has evidently not suffered much, but the right is buried in the substance of the growth. The aorta and arteries at the root of the neck tunnel their way through the tumour, but for the most part are capable of being dissected from its tissue. The left innominate vein passes obliquely across the front of the mass, and its wall is very closely incorporated with the new tissue, although for the most part capable by careful dissection of separation from it.

Microscopic examination of sections from the tumour show it to be composed of tissue very similar to that of a lymphatic gland—viz., a delicate connective tissue stroma containing large numbers of small round and oval-shaped cells. The characters are typically those of a lympho-sarcoma, and this opinion is borne out by examination of microscopic sections of the involved bronchus, which shows the gradual replacement of normal structures by the lymphatic new tissue.

Microscopic examination of sections of the heart wall show that the pericardial tissue is infiltrated with leucocytes and epithelioid cells. On the free surface of the pericardium there are large masses of coarsely reticulated fibrin, which is being replaced by the cells of the granulation tissue beneath.

A careful naked eye examination of the spleen and kidneys confirms the description given above, and there is no doubt that the nodular tumours in these organs are metastatic in origin.

CASE 2. *Lympho-sarcoma of Mediastinum involving the Apex and Root of the Left Lung, in which several attempts were made to find fluid in the pleura during life.**—The patient, R. G., was a butcher, about 30 years of age, married, and of temperate, steady habits. On the evening of the 25th October, 1889, I was asked by my friend, Dr. George M. Connor, to see the patient in consultation with him, and I then discovered that this was not the first occasion on which I had come into contact with the man, for although I have no recollection of it, it seems that some months before I had officially passed him from the receiving room of the Royal

* The specimens from this case were also shown at the Glasgow Pathological and Clinical Society, 10th December, 1888.

Infirmary into the wards, it being one of the rules of that institution that no patient is to be rejected as unsuitable for admission by the resident physician of the day until he has been seen and examined by one of the assistant physicians to the house, with whom the final decision lies. The patient remained in the Infirmary during the greater part of August 1888, and the symptoms and signs of his case were regarded as pointing to pleurisy of the left side. After leaving the Infirmary, the man had been seen on several occasions by Dr. Connor, who thought that the phenomena pointed mainly to phthisis pulmonalis, complicated with rheumatism, and sent him to the country, and he was apparently for a time benefited by the change. He soon, however, became very much worse, and, on the morning of the day on which I saw him, Dr. Headrick of Dennistoun examined him in consultation with his own attendant. It was then thought possible that the symptoms pointed to pleuritic effusion, and with an exploring needle two punctures were made in the lateral and postero-lateral regions of the left side of the chest. One puncture gave no result, the other resulted in bubbles of air passing into the syringe, but no fluid was obtained.

The condition in which I found the patient was as follows:—He was suffering from extreme dyspnœa, and lying upon the left or affected side; the face presented extreme pallor and lividity of the lips, with cold drops of perspiration in the forehead; there was much œdema of the ankles and body, but it was particularly noted that, as regards the head and upper extremities, the dropsy was chiefly limited to the left arm and left side of the neck and head. An enlarged gland could be felt above the left clavicle, and there was the history of a painful swelling over one of the scapulæ, which had been considerably reduced and relieved by blistering. On examining the chest, it was found that there was absolute dulness over the whole of the upper lobe of the left lung in front; in this region, also, the respiratory murmur and the vocal fremitus were both quite gone; the dulness did not extend, so far as could be made out, across the middle line. In the left axillary region, and at the left base posteriorly, the percussion note was somewhat clearer, and in these regions some breath-sound could be quite distinctly made out. The heart's action was rapid and feeble, and the cardiac sounds were replaced by murmurs, the exact rhythm of which was not determined, but they seemed to me to be mainly mitral in origin. It was thought to be not improbable that some

degree of valvular disease might have resulted from the rheumatism. As will be seen from the *post-mortem* report, the alteration in the heart-sounds was the result of peri- not endocarditis.

The opinion I expressed was that the case was one of mediastinal tumour, which had involved the bronchi of the left lung, especially those passing to its upper lobe. My chief reasons for arriving at this conclusion were the very absolute nature of the dulness, and its limitation to the upper lobe of the lung, the base being left comparatively free, and evidently receiving a fair supply of air; the presence of enlarged glands and painful swellings which might fairly enough be interpreted as secondary in origin; and the presence of the oedema on the left side of the neck and in the left arm. Under these circumstances only palliative measures could be suggested. At the very urgent request, however, of one of his physicians, who believed that fluid might possibly be found over the upper portion of the lung, and who was extremely desirous that no possible chance for the man should be thrown away, I consented to perform another exploratory puncture over the apex. This was carefully done, but the result was negative.

The patient died a day or two afterwards, and the following is the account of the *post-mortem* examination, which was performed by myself in the presence of Dr. Connor:—

Only the chest was particularly investigated, as the examination was conducted in a small house late at night, and under very considerable difficulties.

On removing the sternum a large white nodulated mass, from which, on being cut into, a white creamy juice escaped, was found occupying the upper portion of the mediastinum. This mass was in close relationship with the upper lobe of the left lung and the upper extremity of the pericardium; and the left lung was found to be very firmly adherent over its whole extent. The right lung was quite non-adherent, and presented nothing remarkable. The liver was studded with numerous small white nodules, one of which was the size of a large hazel nut, and presented all the characters of a secondary tumour. The abdomen was not more particularly examined. As the pericardium was found to be adherent, the heart, tumour, and entire left lung were removed together for more detailed investigation.

The mass occupying the upper portion of the mediastinum was apparently for the most part composed of greatly enlarged lymphatic glands, which had only partially remained isolated

from one another; and the whole mass was closely related to the great vessels and bronchi. The left innominate vein was discovered passing along in front of the anterior and upper portion of the tumour, and into the lumen of the vein opened numerous radicles, coming from the midst of the tumour tissue. Passing backwards the growth extended underneath the arch of the aorta, and at one point the tumour tissue was firmly incorporated with the arterial wall, so that a distinct depression and puckering of the internal coat had thereby been produced. Passing still further backwards the tumour tissue became firmly adherent to the left bronchus, immediately below the bifurcation, although neither the trachea itself nor the right bronchus seemed to be in the least involved.

Below the bifurcation of the trachea, for a distance of at least 2 inches, the entire wall of the left bronchus was found to have been converted into tumour tissue, so that the mucous membrane had disappeared, and the bronchus at this point was simply a channel through the growth. Below this the bronchi passing to the lower regions of the lung were found to be comparatively free and patent, but the bronchus passing to the upper lobe, which was given off in the midst of the diseased portion, was almost entirely occluded, and during life very little air could possibly have entered it. At its left border the mass just described was firmly adherent to the anterior margin of the upper lobe of the left lung, so that it was impossible to separate them without tearing the tissue. Inferiorly the mass was similarly adherent to the upper portion of the pericardium, and numerous nodules were found in its tissue, and one or two on the wall of the heart. The mediastinal growth, whose relations have just been described, when viewed from the front was found to be somewhat triangular in shape, the apex of the triangle being superior. After hardening, the greatest vertical measurement was found to be 4 inches, the greatest transverse $2\frac{1}{2}$ or 3 inches.

On cutting into the left lung, its tissue in the neighbourhood of the root, and for a considerable distance around this, was found to be converted into a white, soft, almost encephaloid structure. The margin of this morbid area was quite irregular and extended from the root of the organ chiefly towards the anterior and lateral regions, and not so much towards the base and posteriorly. From the main mass of the new pulmonary tissue the tumour showed a tendency to encroach upon the lung mainly by extending along the walls of the bronchial tubes, and to a much less degree along the vascular walls. The internal surface of the left lung was firmly adherent to

the pericardium, through this aspect of which several nodules projected. A recent acute pericarditis, with fibrinous exudation and moderate adhesion, was found to involve the whole of the anterior and left regions of the pericardium, the source of irritation undoubtedly having been the advancing tumour. Several nodules of the tumour were found in the visceral pericardium on the surface of the heart, and almost the entire wall of the left auricle had been transformed into tumour tissue. The valvular structures of the heart were not abnormal.

Under the microscopes sections from the primary mediastinal mass and from the secondary nodule in the liver were shown at the meeting of the Glasgow Pathological and Clinical Society, and these presented all the typical histological appearances of what is usually described as lympho-sarcoma. From the manner in which the mass invaded the pulmonary tissue, it was at first thought that the tumour might be cancerous, but the microscopic examination disproved this opinion. The *post-mortem* examination also proved that the cardiac murmurs noted during life were due to the pericarditis, and not to any valvular disease.

(*To be continued.*)

ON A CASE CHARACTERISED BY SUBCUTANEOUS EMPHYSEMA OF THE NECK AND THORAX, OF PECULIAR ORIGIN.

By JOSEPH COATS, M.D.

A CASE which recently occurred to me possesses so many points of interest that I think it worth while to relate it in some detail.

I received information of the rather sudden and unexpected death of a female infant, aged 7 months, in whom I had considerable personal and family interest, on Sunday, the 5th April. The death took place at Bridge-of-Allan, and the information was communicated to me by telephone. On enquiry it appeared that the child, who was well-nourished and apparently in good health, took ill on Saturday night with an attack of dyspnoea, from which it partly recovered. It was somewhat seriously ill on Sunday morning, apparently suffering considerably, but without extreme dyspnoea. The most peculiar phenomenon was the appearance of a swelling in the neck and the side of the head, afterwards spreading to the upper part

of the chest. This swelling was really a surgical emphysema, which before the death of the child became very marked. Dr. Haldane saw the patient on Sunday morning, and considered that the case was a grave one, but did not expect a sudden termination. However, the patient got worse, and after three or four hours of extreme suffering she died about twelve o'clock, or about eighteen hours after the first attack of dyspnoea.

The case looked exceedingly mysterious, and difficult of diagnosis. An infant, apparently in good health, suddenly develops an extreme dyspnoea, and there soon follows a subcutaneous emphysema of the neck and chest. These facts suggest some kind of rupture in the respiratory system and the escape of air from the air-passages, but there was no indication as to the cause of this rupture. The past history of the child scarcely threw any light on the matter. She had been nearly all her life rather inclined to sleeplessness and crying, and there had been, about two months before, an attack of what was regarded as bronchitis. The only other illness was the occurrence of small subcutaneous abscesses, the first and largest of which had been opened by Dr. H. C. Cameron some three months before death.

I was asked to make a *post-mortem* examination, and found the somewhat extraordinary state of matters now to be related.

There was a surgical emphysema puffing up the entire thorax, extending up the neck so as to form a pronounced swelling on both sides, but especially on the left, where it extended on to the side of the head.

On laying open the chest it was found that in the anterior mediastinum the loose connective tissue was greatly blown up with air. The air in larger and small bubbles swelled out the tissue and caused it to encroach considerably on the pericardium. This gave a sufficiently striking appearance.

A still more striking appearance was afforded by the left lung, which was greatly distended, so as to bulge forward as if much too large for its cavity, and which also presented a peculiar white appearance, much more of a pure white than in ordinary emphysema. A careful examination of this lung showed it to be the seat of an interstitial emphysema. That is to say, the entire interstitial connective tissue of the lung was blown up and infiltrated with air, which on account of the structure of the connective tissue was divided into fine vesicles or bubbles. Thus, on looking closely at the surface of the lung, one could trace the outlines of the lobules by the

presence of rows of clear bead-like vesicles. It was the presence of the air which produced not only the distension of the lung, but also the peculiar white appearance noted above. The air would not only by its presence empty the vessels, but, being finely divided, it would like froth give a white appearance. Indeed, the condition of the lung suggested the appearance of froth. The other lung was not at all affected in this way, having the usual appearance of an infant's lung, with some patches of collapse.

On proceeding to remove the left lung, it was found that extensive tuberculosis existed at its root. This was obviously in the glands, but there was also some extension to the neighbouring lung and pleura causing adhesion in this region. On removal, the bronchial glands were found enlarged and highly caseous, with softening in some. Then it was discovered that a wedge-shaped portion of the lung in its posterior parts was also condensed and caseous, whilst there was scarcely any tuberculosis in any other part of the lung. It remained to discover the source of this strictly limited tuberculosis of a defined piece of lung.

The elucidation of this also afforded an explanation of the emphysema both of the lung and other parts. An adherent bronchial gland had undergone softening and had discharged into the bronchus connected with the tubercular piece of lung. That is to say, on exposing the bronchi and opening them up with scissors, an irregular aperture of considerable size was found in the wall of one of the smaller primary branches of the main bronchus. This aperture led into a cavity in a gland, and some of the secretion of the bronchus was seen issuing from the aperture. This aperture, which allowed the softened contents of the gland to escape and infect the lung, had permitted the air to escape from the lung to the tissues outside.

But this does not yet explain the whole case. It is clear that the rupture into the bronchus must have occurred weeks before death, as there was time for a tuberculosis of the wedge-shaped piece of lung to develop and even for partial softening to occur. The perforation was not immediately followed by the escape of air into the connective tissue. We know, however, that the lymphatic glands have a firm fibrous capsule, and so, when rupture occurred, communication would be established between the bronchus and the softened gland, but this communication would be limited by the capsule of the gland. It would only be by the ultimate giving way of this capsule that the further result of escape of air into the parts around would take place. The escaping air had injected

the connective tissue of the lung, and had passed out to the mediastinum and up into the subcutaneous tissue of the neck and wall of chest.

Remarks.—The narrative of this case has already included most of the remarks which it is necessary to make. It is a known fact that, in interlobular emphysema originating in rupture of the air-vesicles of the lung, the air may travel from the connective tissue of the lung to that of the bronchi, and so up along the trachea till it reaches the subcutaneous tissue of the neck, producing there a surgical emphysema. Such a rupture of the air-vesicles sometimes occurs in diphtheria, whooping-cough, and other cases where respiration is seriously obstructed. It has even been pointed out by Virchow that subcutaneous emphysema having this origin may be incorrectly ascribed to a different cause. If tracheotomy has been performed in a case of diphtheria a subcutaneous emphysema occurring in the neck would naturally be ascribed to the tracheal wound, whereas it might take origin from an interstitial emphysema in the lungs.

The present case does not belong to this category although related to it, especially in the coincidence of an interstitial pulmonary emphysema and a subcutaneous emphysema. I am not aware that a similar case has been put on record.

The case suggests further remarks as to the origin of the tuberculosis. We are to look for the source of infection in the very simple food of an infant of a few months old. The child was partly fed with artificial food from the first month, and was entirely weaned when about five months old. It may be inferred, I think, that it received the tubercular infection from the milk which it received as food. This can scarcely be regarded as unlikely when we consider the very great prevalence of tuberculosis amongst cattle. The body of an infant is obviously an exceedingly favourable nidus for the implantation of the tubercular infection, and till a child is at least a year old it is proper carefully to take precautions against the possibility of infection by means of the milk. In this connection I would just mention a case which I encountered a few months ago, in which a child of fourteen months died of acute general tuberculosis with tubercular meningitis. The source of the general infection was a deep-seated gland in the neck, which had been the seat of tuberculosis for a few weeks or months. Here again we are to look to infection by the food, the circumstances of this case, as well as the other, almost excluding other sources of infection.

SUCCESSFUL THYROTOMY FOR EPITHELIOMA OF THE LARYNX.

By DAVID NEWMAN, M.D., GLASGOW.

C. M'D. consulted me first on the 25th of October, 1890, when he informed me that he had been suffering from hoarseness during the last ten months. The affection of the throat came on suddenly, and remained till the present time without intermission, but sometimes the voice was a little clearer than at others. The patient was occupied during the night in a printing office, and on rising in the afternoon he frequently experienced considerable difficulty in speaking—the aphonia being more marked after sleep than at other periods of the day or night. There was no dysphagia or dyspnoea, and the patient's health appeared otherwise good. Examination with the laryngoscope was made with great difficulty, partly on account of the great irritability of the pharynx, and partly as a consequence of the small size of the patient's mouth and the position of the epiglottis. The epiglottis was unusually large, and lay back so as almost to touch the posterior wall of the pharynx. After spraying the parts with a solution of cocain the epiglottis was dragged forward, and a view of the larynx obtained with difficulty. The mucous membrane of the larynx was found to be deeply congested, and occupying the anterior third of the left vocal cord, and about an eighth of an inch of the right, there was a small warty-looking growth which I took to be an epithelioma. How far the tumour extended below the cords could not be made out. The lymphatic glands were not involved.

On the 9th of November I performed tracheotomy, as it was found impossible, on account of the very irritable condition of the larynx, to remove the growth or a portion of it by laryngeal forceps. Soon after the tracheotomy was performed, a considerable improvement was observed in the condition of the larynx: the hyperæmia subsided, and during the months of November and December the tumour perceptibly diminished in size—so much so, that I had some doubt as to the accuracy of my first diagnosis. There was no history of syphilis, but for diagnostic purposes I placed the patient upon iodide of potassium.

In the beginning of January I asked Dr. Joseph Coats,

who sent the case to me, to examine the larynx again, and on doing so he agreed with me regarding the improvement that had taken place during the last two months. The patient was also satisfied that he could speak clearer and with greater ease. The tracheotomy tube was retained.

On the 7th of February I again saw the patient, and he informed me that since his last visit he had suffered from a severe cold, associated with much coughing and a moderate amount of expectoration. At that time the voice was decidedly worse than on any previous occasion, and, on making a laryngoscopic examination, the mucous membrane was found to be deeply injected, and the tumour was considerably increased in size. There was, however, no dyspnoea. Beyond the throat affection the patient enjoyed perfect health. I therefore resolved to remove the tumour by thyrotomy, and Dr. Coats concurred in my view that it was the proper treatment. On the 13th of February the patient was placed under chloroform, the vapour being administered through the tracheotomy tube. When the patient was anæsthetised, an attempt was made to introduce a Trendelenburg's tampon-canula, but it produced such violent spasm of the trachea and bronchial tubes that it was at once withdrawn. I then endeavoured to employ a Hahn's sponge tracheal tube with the same result. The tracheotomy canula was then replaced, and to the inner tube of it an elastic tube six inches long was attached, so as to permit the anæsthetic being administered at a little distance from the operator. An incision was then made in the middle line in front from the hyoid bone to the upper edge of the cricoid cartilage; after exposing the thyroid cartilage and the thyro-hyoid membrane, the cavity of the larynx was opened with a strong pair of scissors, and a small sponge, with a ligature attached, was placed in the trachea above the tracheotomy tube. This effectually prevented any blood from passing downwards. The two sides of the larynx were held widely apart with blunt hooks, and a very good exposure of the growth was got. The disease was more extensive than was suspected, so that I had not only to remove the left vocal cord and the anterior half of the right cord, but also a considerable portion of the mucous membrane below the cords. This was done by scissors, and the cut surface was freely cauterised with the electric cautery. The small sponge was then withdrawn, the larynx cleansed, powdered with iodoform, and plugged with gauze. On the following day the gauze was removed

and a careful examination of the larynx made through the wound, but no remnant of the tumour was discovered. A microscopic examination of the growth by Dr. Coats showed it to be a squamous-celled epithelioma. The patient was fed for the first four days by an œsophageal tube, and he was kept as much at rest as possible. No sutures were employed, but the two sides of the wound were brought together and kept in position by sticking plaster. The patient made a most satisfactory recovery, and can now (20th April) speak clearly, the false cords having taken up the function of the true cords. The patient is free from any discomfort. In this case, when I first examined the patient, I came to the conclusion that the growth was an epithelioma, but the circumstance that marked improvement occurred after tracheotomy was performed, and the fact that I was unable to remove a fragment of the tumour for diagnostic purposes, deterred me from operating at an earlier date. As I have observed elsewhere,* in diagnosing cancer of the larynx the surgeon can only bring one sense, that of sight, to bear on the diagnosis, and, for that reason, he has been driven to employ a method of investigation which he would not consider justifiable when the cancerous growth has originated in other parts. On the one hand, while intra-laryngeal excision for microscopic purposes clears up the diagnosis in laryngeal carcinoma, it also exposes the patient to a serious danger by increasing the rapidity of secondary new formations should the preliminary exploratory operation not be immediately followed by a radical removal of the disease, either by thyrotomy or by laryngectomy. In cases suspected to be carcinoma the endo-laryngeal operation should not be resorted to unless the patient is willing to have a radical operation performed. In one of the cases I brought before the Clinical Society of London, ten days after the intra-laryngeal operation, a swelling about the size and form of a horse-bean was discovered over the superior corner of the thyroid cartilage, which ultimately proved to be a carcinomatous lymphatic gland. In the other case the glands became involved seventeen days after the exploratory operation. Both of these patients refused to have an external operation performed, even although the nature of the disease was fully explained to them.

* "Two cases Illustrating the Dangers of Intra-laryngeal Interference with Cancer of the Larynx" (*Clinical Society of London, Trans.*, vol. xxii, p. 104).

In the case of C. M'W. the operation of thyrotomy was selected as the proper one after the larynx was opened and the tumour exposed. Previous to that time I was in doubt whether or not laryngectomy might be required, but when I found that the tumour was comparatively small in size, not involving the deeper structures within the larynx, I felt satisfied that the right thing to do was to cut the diseased parts out together with the immediately surrounding healthy tissues. In every respect this case was a most suitable one for the operation employed. The interior of the larynx was well exposed and the whole of the growth could be seen and easily removed. The patient made a rapid and excellent recovery, and it was only on account of extremely cold weather that he was kept indoors so long.

The only question that remains to be considered is the possibility of recurrence. At present the larynx is perfectly free from disease and the false cords are compensating wonderfully for the loss of the vocal ligaments, so that the patient is now able to speak in a tolerably distinct and loud voice. He is in perfect comfort—there is no enlargement of lymphatic glands; therefore, as far as one can judge, the cure is a complete one. I may say that I have had several similar cases in which the same operation has been performed more than two years ago without recurrence up to the present date, and Mr. Henry T. Butlin has recorded some equally successful cases,* although they were not nearly so favourable for the operation as the one described above.

CASE OF EPITHELIOMA OF THE UPPER PORTION OF THE ŒSOPHAGUS SUCCESSFULLY TREATED BY GASTROSTOMY AND TRACHEOTOMY.†

By DAVID NEWMAN, M.D., GLASGOW.

At a meeting of the Glasgow Medico-Chirurgical Society, held on the 9th January last, I showed a case very much the same as the one about to be described. In both instances the tumour occupied a position immediately behind the larynx,

* *Trans. Clinical Society of London*, vol. xxii, page 94.

† Shown at the Pathological and Clinical Society of Glasgow on the 20th April, 1891.

and the symptoms developed very rapidly, requiring gastrostomy to be performed at an early stage in the course of the disease.

The history of the case now under consideration is brief. The patient, Mrs. C., æt 43, consulted me on the 11th December, when I found her to be suffering from an epithelioma of the œsophagus immediately behind the larynx, and I recommended her to go into the Royal Infirmary, which she did on the 23rd December, 1890. She complained of difficulty in swallowing and slight pain in the throat, which sometimes extended to the ears. On enquiring into the history of the case, it appears that she has always enjoyed good health, with the exception of trivial ailments, until the beginning of November, when she complained of dryness at the back of her throat. On examination her medical attendant discovered the pharynx to be deeply congested, and a small ulcer was seen a little to the left of the middle line. Under treatment the condition of the throat improved, the ulcer treated up, and she felt much easier. A few days after this recovery took place she again consulted her doctor on account of difficulty in swallowing. He passed a probang into the œsophagus, and "felt an obstruction on withdrawing it," and he noticed that the bougie was stained with blood. Slight hæmorrhage continued for some hours. Her attendant, Dr. Drysdale, suspected malignant disease, but, owing to the sudden onset of the symptoms, and the almost complete absence of pain, he felt reluctant in expressing an opinion regarding the nature of the disease, and advised the patient to consult me. When I saw her for the first time, on the 11th December, 1890, she was weak, anæmic, and much emaciated, and stated that for the last three weeks she had been unable to take any solid food, but was still able to take fluid and semi-fluid diet with ease. She told me that since the middle of November the symptoms have steadily become worse, and that, during the last six weeks, she has lost considerably in weight; and, although she could not give me exact figures, she believed that she had lost twenty-eight pounds. On examination I discovered a hard, firm swelling immediately behind the cricoid cartilage, and extending from the level of the vocal cords downwards for a distance of about an inch and a half. It was found impossible even to pass a small-sized bougie; but, on examination with the laryngoscope, no encroachment of the lumen of the air-passage was observed either by pressure from behind or by invasion of wall of the larynx. The voice was perfect and the movements of the

cords complete. On palpation externally not only was the tumour described above apparent, but there were also several small, firm swellings, the largest of which was about the size of an almond, and was situated to the right of the thyroid cartilage, where it was firmly adherent and imbedded in the surrounding structures.

29th January.—The first stage of gastrostomy was performed to-day in the same way as described in the case of W. H.,* and, on the 5th February, a small galvano-cautery point was introduced through the exposed wall of the stomach, and a No. 2 gum elastic catheter was passed into the stomach through the opening thus made.

27th February.—During the last four weeks the patient has made very satisfactory progress, and now feels much stronger than she did previous to the operation, even although she has been unable to take any food by the mouth. On account of the very weak condition of the patient since admission, no accurate observations have been made as regards body weight. Her friends who visit her say that they observe a considerable improvement in her appearance. Since the operation was completed the patient has been fed entirely by the stomach-tube, and now one, the diameter of a No. 18 œsophageal bougie, has been introduced, so that the patient feeds herself by means of a filler. All her food, with the exception of purely albuminous diet, is masticated carefully before it is passed into the stomach. Occasionally she complains of considerable pain in the neck, especially on the right side, also in the right ear, but this is generally relieved by the employment of a linament composed of equal parts of camphor and hydrate of chloral. Until to-day the food given by the stomach was supplemented by nutriment administered by the rectum, but now the patient is so well as no longer to require this.

21st March.—An examination of the throat, made to-day, showed the right vocal cord to be fixed in the position of complete adduction, and the lumen of the larynx was encroached upon by the posterior wall being pressed forwards by the tumour in the gullet; but still the air space was sufficient to allow a plentiful supply of air. She had been walking about the ground of the Infirmary for more than a week, and as her general health was now much improved, she was allowed to visit her friends in Glasgow before returning home.

28th March.—Since patient was dismissed the weather has

* *Glasgow Medical Journal*, March, 1891.

been extremely cold, and a few days after she left the hospital she contracted a "cold," and by the time she was brought to the ward dyspnoea was very marked, and inspiration was associated with considerable stertor—so much so, that my assistant, Dr. M'K. Dewar, who was called to see the case, at once performed tracheotomy. The low operation was done after injecting the soft parts with a solution of cocaine.

18th April.—Since tracheotomy was performed the patient has greatly improved in strength and appearance, and now, although she gets no food by the mouth, and only a little air passes otherwise than by the tracheotomy tube, she suffers from little discomfort beyond the pain in the neck and right ear.

She went home on the 25th April.

Remarks.—One of the most marked features in this case is the very rapid onset of the symptoms, and the sudden development of dysphagia, which was so rapid as to raise a doubt whether the disease was inflammatory or malignant in its nature. This sudden difficulty in swallowing is probably the result of two circumstances—first, the disease involves the narrowest and least distensible part of the Œsophagus; second, the action of the muscles of deglutition are directly interfered with by the tumour, consequently the food does not pass far enough into the gullet to allow the action of the circular fibres to come into play, and hence the greater tendency of food to regurgitate into the mouth or larynx, when the tumour is situated high up than when it occupies a lower part.

Another circumstance of importance is the danger in such cases to interference with respiration, either as a consequence of pressure of the growth leading to a diminution in the lumen of the air-passages, or by invasion of the larynx by the new formation. In this case the disease did not actually invade the air-passages, but, from its bulk within the gullet, the posterior wall of the larynx was pressed forwards, and at the same time the circulation in the mucous membrane was so impeded as to produce a sudden œdema. As a result of these combined influences, respiration was impeded and tracheotomy required for the relief of the patient.

The result of both operations was quite satisfactory; but, in consequence of the extensive nature of the disease, a radical operation could not be thought of.

THE HISTOLOGY, DEVELOPMENT, AND PHYSIOLOGICAL ACTION OF THE FALLOPIAN TUBE.*

BY A. MILROY, M.D., KILWINNING.

MR. PRESIDENT AND GENTLEMEN,—First of all I wish to acknowledge the honour which your Secretary conferred upon me when he asked me to read at this meeting a short paper on some subject connected with obstetrics. In a weak moment I consented, so that it is with fear and trembling I now stand before you to implement my promise.

About five years ago I made a fairly exhaustive examination, by means of the microscope, of sections of the Fallopian tubes of children, adults, young puppies, cats, &c., and came to the conclusion that the Fallopian tube has no more right than a sponge has to be called a tube or trumpet. It is well known to gynæcologists that if the glands of the cervix uteri were unfolded they would cover a surface very much larger than the interior of the uterus, but it is not so well known that an unfolded Fallopian tube would cover a much larger surface than either; hence the Fallopian tube is an organ which should pre-eminently receive the consideration of the gynæcologist. The description of the Fallopian tube which we get in books can be summed up in the following words:—It forms a thickened cord varying in length from 4 to 6 inches; it lies between the two layers of the broad ligament; it increases in size as it passes outwards, and ends in a trumpet-shaped mouth which is turned downwards towards the ovary. That end of the tube which terminates in the uterus is called the ostium uterinum, whilst the external opening is called the ostium abdominale. Its mucous membrane, which is lined with columnar ciliated epithelium, is raised into a number of longitudinal ridges, and gives a stellate appearance to the tube when cut across. No doubt that description is concise and, as far as it goes, perfectly correct, but if we wish to understand the pathological changes brought about by disease in this organ, our knowledge of its minute anatomy must be a little more extensive.

In speaking of the tube lengthwise we divide it into five different parts: (1) The intramural part; (2) The isthmus proper, or the inner third of the tube; (3) The ampulla, or outer two-thirds of the tube; (4) The sphincter, which closes

* Read before the Glasgow Obstetrical Society, 25th March, 1891.

the ostium abdominale; (5) The fimbriated extremity. The commencement of the intramural part is sharply defined from the uterine cornu by musculo-mucous folds which spring up where the cornu ends, and those who have gone into the embryology of the subject say that in early foetal life a node of embryonic tissue is seen to rise from the wall of the Müllerian duct, which ultimately becomes the round ligament. This node, then, is the point of division between the end of the uterine cornu and beginning of the isthmus. The ampulla and isthmus are not so sharply differentiated. About two-thirds of the circumference of the oviduct is covered with peritoneum, and under the microscope both longitudinal and cross sections exhibit a puckered appearance of this membrane. This puckering is evidently intended to allow of dilatation of the organ. Between the peritoneum and the cord is a loose layer of connective tissue, in which are to be found arteries, veins, and lymphatics. Next in order after the connective tissue is a longitudinal muscular layer, then a well marked circular layer which is particularly thick and strong in the isthmus. Some observers describe a third layer in the ampulla, having a longitudinal direction and lying internal to the circular fibres. I have never met with this layer in the ampulla, but can show you them in the isthmus. Such fibres are found in greatest numbers when present at the base of the primary folds, but their distribution is very uneven. This third layer of muscular fibres has its prototype in the Fallopian tubes of some of the inferior animals, where it is always present. In the tubes of children, a little before birth, the circular layer is developed far ahead of the musculo-mucous folds in the tube. I have not been able to fix the times at which the different parts of the tube put in their first appearance, nor have I been able to trace the changes during development, nor tell when it is completed. On this subject I have to depend entirely on such specimens as those I now show you. Here, then, is the cross section of the tube of a child a little after birth. It shows the circular muscle fully developed, whilst the musculo-mucous folds are just springing up. The fully developed, healthy tube has got its lumen almost completely filled with what appears to the naked eye as spongy tissue, but under the microscope is found to consist of primary and secondary musculo-mucous folds covered with ciliated epithelium. These primary and secondary folds vary in size and shape at different parts of the tube. Both are short and stunted in the isthmus, but in the healthy ampulla they sometimes

stretch from side to side, forming trabeculæ, which you can see for yourselves under one of these microscopes.

You will also notice from the specimens that arteries abound in the primary folds, whilst veins and lymph spaces take up their position in the walls of the tube. This I regard as of considerable physiological importance. The secondary folds are much more equal in size than the primary ones. Unstriped muscular and connective tissue enter into their composition. They are very thin, as you will notice, and sometimes have the power of flapping backwards and forwards in the lumen of the tube. When one looks at this arrangement the first thought which arises in one's mind is the terrible havoc that inflammation must work by glueing together these delicate membranes; and here, although it is out of my way, I am tempted to show you a specimen in which the folds are matted together by a simple inflammation. The sphincter which closes the ostium abdominale is generally said to consist of a thick band of circular muscular fibres. I cannot say that I have found such to be the case. The circular fibres are scanty as compared with those of the isthmus; in fact, I would regard this as a very weak sphincter indeed, but one point is noticeable—the minor folds are absent on the inside, and there is great puckering of the peritoneum on the outside. Evidently nothing more is here required from the sphincter than the simple closing up of the peritoneal cavity.

The fimbriated extremity consists of four or five primary finbriæ, which may not inaptly be compared to the five fingers of the hand. The one that answers to the thumb is attached to the ovary, to prevent the morsus diabole from floating adrift. These finbriæ are just an expanded continuation of the longitudinal and circular fibres. The longitudinal ones are continued on as such to the tip, whilst the circular ones are represented here as having an oblique direction. To the naked eye these finbriæ appear like obovate leaves with serrated edges. Longitudinal mucous plicæ run along the faces of them, and cross sections form very beautiful objects for the microscope. The blood-vessels are exceedingly numerous, and when full must enormously increase the size of the finbriæ. I show you one such section, and ask you if these are not glands which you see under the microscope? I presume they are, and this fact I regard as of considerable physiological importance. Of course you are all aware that the existence of glands in the Fallopian tube is denied, but here they are on the face of one of these finbriæ, just at

the place they are needed, as I will afterwards point out to you.

I now direct your attention to another fact of very great interest in connection with the Fallopian tube. It is not always a tube having a single canal. There is one specimen under the microscope showing you three canals. They are all alike in size and structure. I show another with two canals, in which one is more developed than the other. These abnormal passages, I believe, have been noticed by others, but no satisfactory account of them has yet been given. When they do exist they are most frequently, but not always, found near to the outer end of the ampulla.

Having spoken about these mucous folds and unexplained passages, one is naturally compelled to say something about the development of the tube. You are all aware that the oviduct is developed from the Müllerian duct, which is said to begin to appear in the embryo as a thickening and invagination of the peritoneal epithelium. You also know that this tube first exists as a solid rod of cells, and that afterwards a lumen is formed in it. From this time until the folds appear I believe that very little is known about the different phases in its development. There is a time, however, when the tube is not a solid rod of cells, and when folds do not yet exist, but when the cells have taken up the position of cross bars of embryonic tissue, and this state of matters you can see for yourselves under one of these microscopes. At what period of intra-uterine life these cross bars begin to replace the solid rod of cells I know not, but I have found it delayed as late as 16 years of age. The unstriped muscle cells of the circular layer, in a well prepared specimen, are seen to file in in the most orderly manner into these cross bars, forming primary folds, and, having entered them, to turn sometimes to the right and sometimes to the left, to form a secondary fold, the embryonic tissue meanwhile clothing the muscle cells, and ultimately becoming ciliated epithelium. In the isthmus this process stops far short of what it does in the ampulla. If I have not interpreted these specimens wrongly, I think there is a time when the cells in these cross bars are arranged so as to form little cross tubes, but on this point I am not prepared to insist. Another question yet presents itself—How are the three separate passages to be accounted for? Can development throw any light upon them? Professor Cleland has suggested to me that they might be formed by adhesions in the tube, or they might arise from the openings which

are sometimes found in addition to the proper fimbriated extremity, and regarding which Allen Thomson says "they admit of explanation on the supposition of the duct of Müller having remained open at these places." I at one time thought they were primary and secondary diverticulæ—for, cut at one part and you get two passages, whilst cut a little further out and you will get three. They may have some connection with other abnormalities. One of my cases that showed these passages was born with a large hydrancephalocele in the occipital region, whilst another, who was a young woman, had an infantile uterus.

Having thus briefly discussed the minute anatomy of the Fallopian tube, let us go one step further and enquire how it performs its function. So far as I can learn, the different theories regarding the function of the oviduct may briefly be summed up thus: The muscles of the dilated end of the tube, acting under reflex influences, seize the ovum, and present it to the sphincter, which relaxes and receives it. The onward course of the ovum, until it reaches the uterus, is completed by ciliary movement and peristaltic contraction. This explanation is open to grave doubts. I don't mean to say that the theory which I am about to propound is entirely new, but I am sure it is more philosophical than the above, and I recommend it to you for your acceptance. The specimens here shown demonstrate that the Fallopian tube is an erectile organ, and I maintain that under the influence of the *nervi erigentes* the large veins and venous sinuses of the walls of the tube are filled with blood. The tube is in consequence lengthened and increased in thickness, although the spaces in the lumen are lessened in size. This lengthening causes the fimbriated extremity to be pushed down upon the ovary, guided thither by the muscle cells of that fimbria which is attached to it. This condition probably obtains during successful coitus and for some time previous to menstruation. A turgid Fallopian tube is the precursor of nidification in the uterus. If the Graafian follicle be near the surface of the ovary, the titillation produced by the fimbriæ will undoubtedly hasten its rupture, and when this has been accomplished, the ovum, with part of the liquor folliculi, will at once be sucked up into the ampulla by capillary attraction, assisted, no doubt, by the ciliæ of the epithelium. It is now that the glands on the face of the fimbriæ perform their function. They pour forth a sticky fluid, a sort of bird lime, as it were, which protects the tender ovum and also prevents it from dropping into the abdominal

cavity. What, then, has been accomplished by this one supreme act? In all probability the ovum has reached the inner end of the ampulla, carried thither by capillary force. The oviduct is so formed that this kind of force alone will not carry the ovum all the way into the uterus, but it will carry it along two-thirds of its length. Had the small end of the tube, with a structure similar to the ampulla, been resting on the ovary, then, according to a well ascertained physical law, the ovum would in all probability have reached the uterus at once; but this is evidently not what is wanted. It is intended that the ovum should rest somewhere about the inner end of the ampulla, and await the sperms. There could be no better place for it. The surrounding surface is soft and spongy, and comparatively free from disturbing influences. It halts, as it were, in a hatching machine admirably heated up by a multitude of arteries in the primary folds. When fecundation has been accomplished the vis nervosa is exalted, so that, with renewed vigour, the ciliæ carry the ovum on into the uterus. I don't think that vermiform contraction has got anything to do with the passage of the ovum. I believe that the proper function of these longitudinal and circular muscles is the arrangement of the calibre of the tube either to increase or lessen capillary force as is required. One could hardly expect that vermiform contraction would be a useful form of force in a canal filled with primary and secondary musculo-mucous folds. It is generally admitted that fecundation takes place in the Fallopian tube, and its minute anatomy shows where this process is most likely to be accomplished. It cannot take place in the spongy part of the ampulla, as we know that for successful fecundation many sperms are required, and a shower of these could not reach the ovum in this complicated maze. So far as I can see, the inner end of the ampulla is the most likely meeting ground.

Gentlemen, in concluding, I invite your friendly criticism. If I have not converted any of you to my way of thinking, or convinced you that the Fallopian tube is an unexplored and unexplained region of the human body, then I ask you to examine these photographs and microscopic slides; they will speak to you more eloquently than I can.

“Sounds which address the ear are lost and die
In one short hour, but those which reach the eye
Live long upon the mind, the faithful sight
Engraves the knowledge with a beam of light.”

THE PHARMACY ACT AMENDMENT BILL.*

BY J. WALLS WHITE, M.D., UDDINGSTON.

THE Pharmacy Bill at present in Parliament, which we have met this evening to consider, is promoted by the Pharmaceutical Society to enlarge its powers. The part of the Bill that affects us, as medical men, is contained in Section 6, and reads as follows:—"It shall be unlawful for any person to compound medical prescriptions for *sale* unless he be a pharmaceutical chemist, chemist and druggist, or qualified medical practitioner, or acting under the *supervision* of such qualified person." This clause at first sight looks very harmless; but a little study of its far-reaching import, in conjunction with some recent legal decisions in prosecutions by the Pharmaceutical Society, shows that it means an undue interference with the rights and privileges of the medical practitioner, and that it is contrary to the spirit, if not the letter, of the Pharmacy Acts of 1868 and 1869. The Act of 1869 says—"That nothing contained in the first fifteen sections of this Act (the Act of 1868) shall affect any person who has been registered as a legally qualified medical practitioner before the passing of these Acts, nor any person who may hereafter be registered as a legally qualified practitioner, and who, in order to obtain his diploma, shall have passed an examination in pharmacy." These Acts did not refer to the practitioner in his right to visit the sick, or to prescribe for the same; the only right it could refer to was the right a medical practitioner had to keep an open shop, surgery, or dispensary wherein he not only prescribed, but compounded his prescriptions, and had them compounded by his servants for *sale*.

To keep an open shop, and conduct such with the aid of such assistants as he considered necessary and competent, has been the right of medical men in all time past. To obtain our diplomas we have had to pass examinations in pharmacy, also in chemistry and botany; and we all know how severe these examinations are and have been, certifying us efficient not only to compound prescriptions, but also to act as instructors and examiners in pharmacy, capable of teaching the dispensers we entrust with the compounding of our prescriptions and managing our businesses. And it is a fact that a very large proportion of the compounders of medicine in Scotland at the present time have been trained in doctors'

* Read before the Glasgow Southern Medical Society, 14th May, 1891.

shops. In the profession, also, how many medical men now in the front rank have commenced their career by conducting an open shop; and at present this is the only way many of the younger graduates have of introducing themselves to the public. So that to interfere with and place obstructions in the way of our conducting our businesses as hitherto, to make it illegal for a practitioner to have his prescriptions dispensed by assistants of his own training and choosing, is an infringement of our established rights that must be repelled. It was the intention and universal opinion, at the time of the passing of the Pharmacy Act of 1868, that our businesses should be outside that Act, and for the last 20 years they have been so. Last year, however, a legal decision was given in Glasgow, to the effect that it was unlawful for the unregistered assistant of a medical man to dispense, for *sale*, a prescription containing a scheduled poison, although the man convicted was well qualified to and did compound the prescription correctly. This decision, conjoined with this new move of the Pharmaceutical Society by this Bill, will render it incumbent on this Society, representing such a large number of the profession in this city, that should such another case be brought into court, to have a decision on this point by the Court of Session, especially so as we find, in Section 17 of the Pharmacy Act, it distinctly laid down—"That, for the purposes of this section (the sale of poisons), the person *on whose behalf* any sale (of poison) is made by an apprentice or servant shall be deemed the seller." The employer, the responsible owner of the shop, has hitherto been deemed the seller, and he is accountable for the acts of his servant, whom it is his business and interest to see is a competent person.

This new Bill goes far beyond former Acts, in that there are no exemptions at all as to the business of the medical practitioner. This Bill makes it unlawful for *anyone* but a registered person to compound a medical prescription, no matter how simple that be, whether it contains a poison or not. To quote the language of the President of the Pharmaceutical Society, the words "medical prescription" meant a good deal more than some "of his audience thought. He read medical prescription to mean a piece of paper on which a medicinal compound was written for the purpose of being dispensed. He read medical prescription in that Bill to mean not merely the prescription of a doctor pure and simple, but any form of prescription or recipe for medicine presented for compounding. They (the druggists) were in the habit of regarding a medical prescription as being necessarily the

prescription of a medical man, but he begged to observe that the prescription referred to in this clause was a prescription of medicine, he did not care who wrote it." This Bill is got up entirely by the Council of the Pharmaceutical Society, and how the medical practitioner is regarded by them I give you, in the words of the President:—"The medical practitioner is licensed by law to compound medicines—he did not sell them; and, until they (the druggists) got the same right as he had (I suppose the right to prescribe), it would be unwise to fight him. They (the medical practitioners) had a perfect organisation, 16,000 strong, and he did not think they could touch them at present; but when the chemist and druggist was licensed by law to compound prescriptions (a right he already possesses, and needs no further license) they might do something in that direction, but they must proceed gradually, because they could not afford to begin the campaign by quarrelling with 16,000 medical men." In the same speech he tells his audience "that he had still a few things up his sleeve that those present did not know of, and they would consider him a great fool if he was to go stumping about the country telling them all the little things they were hoping and dreaming for."

There is one word in this Bill that I should have liked to have got this gentleman's explanation of—the word *supervision*. Immediate supervision was the first rendering, but immediate has been left out. Supervision may be one of the little things he has in reserve up his sleeve, to come down when the Bill gets into Committee. This phrase makes the druggist as well as the practitioner a prisoner in his shop, and that he might be kept there the druggist is to be exempt from serving on juries. The druggist freed from jury service may be able to give constant supervision demanded by this new Bill, but it is out of the question to think that medical men can give constant supervision, as of necessity they must make their visits. No doubt the President of the Pharmaceutical Society was aware of this, and got the Bill so drafted as to strike at and affect our businesses. This provision, however, is not in the interest of the public, but in order that there may be fewer shops kept by medical practitioners. In fact, it has been openly stated by some members of the Pharmaceutical Society that that was one of the objects of the Bill.

The compulsory curriculum clause, whereby it is necessary for apprentices to attend certain classes in recognised schools or colleges before they can present themselves to be examined for registration is objectionable. Our surgeries have hitherto

been practical schools for educating youths to the trade; this is no longer to be allowed. The examinations of the Pharmaceutical Society are amply sufficient at present to secure that all who pass have knowledge and experience necessary for the safety of the public. Examining boards should have nothing to do with where that knowledge has been acquired.

And finally, gentlemen, I would ask, What abuse has stirred the Pharmaceutical Society to bring forth such a Bill as this? Assuredly the public interest or public safety has not demanded it. This Bill permits unregistered men to dispense in hospitals and free institutions. The rank and file of the drug trade do not want it. The medical practitioner has no desire for it. No; it is got up by a few ambitious leaders of the Pharmaceutical Society, who desire to make their business more of a profession and less of a trade, and thereby secure a monopoly; and this it will do by reducing the numbers in the trade. How, then, does this Bill affect the medical practitioner with an open shop? His present assistants, if not registered, are of no use, and sufficient registered men are not to be got. It will be illegal for him to compound a prescription for his master or others. He cannot even make the simplest sale, the order for which is written on paper. The older assistants, qualified and experienced, who shrink from the preliminaries of the pharmaceutical examination, will have to seek a livelihood elsewhere. This curriculum will shut the door against the middle-class youths just from school from serving with us. Those parents who can afford to send their sons to college will never send them to the drug trade, as by a very little more expense they could qualify to swell the already overcrowded ranks of the profession. This supervision phrase is meant to keep us to our shops while our other duties send us abroad. We cannot do two things at once, or be in two places at the same time. We will therefore have to obey the Pharmaceutical Society and close our surgeries.

The majority of medical men relieve themselves of their shops when they can afford to do so; but to the medical man who practices among the working classes in large towns and in country districts, as also to the parochial and district surgeon, an open shop is essential.

We have no desire to legislate for the Pharmaceutical Society, and we deny that they have a right to legislate for us; and to give effect to such we must appeal to our members of Parliament to use their influence and have this Bill thrown out.

If it should pass the second reading, then in Committee

have a clause inserted exempting the qualified medical practitioner, as was done by the Pharmacy Act of 1869; and whatever be the fate of the Bill, seeing the aggressive manner in which the leaders of the Pharmaceutical Society are seeking for power, even should the Pharmaceutical Society grant registration to old assistants, a thing in common honesty and good policy they can hardly refuse to do, the British Medical Society should be approached to formulate a clause for insertion in the first Medical Bill, whereby the status and powers conferred on us by our diplomas shall be conserved to us, so that the certificate of a qualified medical practitioner declaring that the assistant who has been trained by him for say five years in his surgery is qualified to compound prescriptions. If the assistant wants to open a shop for himself, then let him qualify under the Pharmacy Act, but so long as he is an assistant let us have the right to protect and advance him.

The Bill is a most perfect and clever piece of English literature for giving the promoters the powers they seek—that of creating a monopoly; and monopolies, we know, are never for the public good, nor are they in accord with the spirit of the age.

Obituary.

RICHARD A. D. ROBB, M.B.

It is our mournful duty to record the death of Dr. Richard A. D. Robb, which took place at his residence, 8 Carlton place, on the 18th May last. This intimation will no doubt come with sad surprise to those of our readers who may have seen Dr. Robb but very recently going about in his apparently robust health and jovial good spirits. But, when he was confined to his room about the end of March last on account of what he thought at first was only a feverish cold, it was found that he was suffering from a malignant tumour of the abdomen. The tumour enlarged with excessive rapidity, and soon extended to the interior of the chest. His very trying illness, which, from the beginning, he must have known to be mortal, was borne throughout with quiet resignation and fortitude. He even retained his usual cheerful manner, and often expressed a constant desire to cause as little trouble as possible to those who were only too willing to do all they could for him. The medical friends who were in attendance on him, and those who

visited him during his illness, never heard an impatient or complaining word fall from his lips.

Richard A. D. Robb was born at St. Andrew's Square, off the Saltmarket, on the 22nd June, 1855, his father being the present highly respected agent of the Trongate Branch of the Bank of Scotland. The family name was for a long time identified with the locality when it was the residential quarter of some of Glasgow's best citizens.

Before entering upon the study of medicine he was associated with his father, and engaged in his business of property agent. With the exception of a few years' residence in a public school in England, he received all his education in Glasgow, and studied at the University. Being exceedingly popular with his fellow-students, Robb was generally nominated to take any leading part among them, but his naturally modest disposition always led him to make excuse at the time and try to withdraw. One of his medical friends and former teachers, who attended him in his last illness, remembers vividly an occasion of the kind when his class-fellows selected him to make a presentation of a token of esteem to their teacher.

Dr. Robb had a kind and considerate disposition which was ever finding out objects for sympathy and help. When his most intimate fellow-student fell ill and underwent operation in the Western Infirmary, no one was more assiduous in attendance and in caring for his wants till the fatal end. And throughout Dr. Robb's eight years' practice many poor sick people have received untold benefit from his thoughtful and self-denying work among them. He was always ready to do all in his power for a sick friend or casual patient, never caring for fee or reward. He was only too willing to give his cautious advice and indefatigable assistance to all who sought them. Never was he happier than when he was serving others.

Dr. Robb made a special study and practice of aural surgery, and by his hearty co-operation with his friend, Dr. Erskine, Dr. Hartmann's German work on *Diseases of the Ear* was translated and published.

In the agitation regarding the unsatisfactory administration of medical charity, which engaged public attention in Glasgow about three years ago, Dr. Robb took a prominent part, and collected elaborate statistics on the subject from all the hospitals and medical institutions in Great Britain. He held that medical charity was too often bestowed upon the undeserving class, to the exclusion of poor people who required it most. Indeed, he took a great interest in all affairs affecting the profession,

and in medical politics generally, and being resident in the south side of the city, he has been for some years a prominent member of the Southern Medical Society, in which he has held several positions of office, having been elected treasurer for the present session.

JOHN HOYLAND LILLY, L.R.C.P. ED., AND L.F.P.S. GLAS.

THE son of a Nottinghamshire doctor, John Hoyland Lilly, was brought up in the village of Ollerton, on the borders of Sherwood Forest, and in the district dignified under the title of "The Dukeries." His later education, before entering on medical study, was received in the Medical Benevolent College at Epsom, and he always in after life took great interest in the growth of that College, and in its journal, *The Epsomian*, to which he remained for many years a subscriber.

He entered Glasgow University as a junior student in 1865, but had not completed his first winter session when his father met with a fatal accident while out driving, and Hoyland Lilly was thus early thrown on his own resources. In this way he was forced to take a situation as unqualified assistant, and did not return to college for a period of two years. While still unqualified, he became assistant in the fever wards at the Royal Infirmary, at a period when typhus was epidemic, having during one part of his term of office two other assistants under him. From the fever wards he passed into the surgical wards, becoming house-surgeon to Dr. Donald Dewar. These appointments, while very valuable in themselves, delayed his becoming qualified, and it was not till 1871 that he took the double qualification of the Glasgow Faculty and the Edinburgh College of Physicians. The same year he was appointed physician superintendent at the Belvidere Fever Hospital, in succession to Dr. William Macewen, an office which he filled with great acceptance till he was appointed superintendent of the Western Infirmary in 1874. The organisation of a new hospital is at all times an arduous task, but especially so when a large medical school is connected with it, and Lilly undoubtedly found the work of the first two years very trying; his even temper and amiable disposition, however, stood him in good stead, and he came out of the ordeal well, securing the good will of directors, hospital staff, and students alike, so that general regret was expressed when in the year 1877 he decided to try the field of general practice.

During the nine years of his residence in Glasgow he was a

very familiar figure in the streets and in medical gatherings of all kinds, his long tawny beard generally attracting attention and leading persons to inquire who he was. He was of athletic build, and was an enthusiastic cricketer, as became a Notts man. His "slogging" powers gave the name of "Leslie," under which he played, more than a passing notoriety; and along with the brothers Boyd, and one or two others, he secured a very reputable position for the small Easter Hill Cricket Club, under the nominal captaincy of T. D. Finlay, Esq. He made hosts of friends in Glasgow, being esteemed by all who came in contact with him.

Soon after leaving the Western Infirmary he entered into partnership with Daniel Seaton, Esq., at Bitterne, a suburb of Southampton, which partnership subsisted till last summer. He was known in that neighbourhood as a sound and conscientious practitioner, and was held in the highest respect by all ranks of society.

Four years ago he came up to Scotland to consult a surgical friend with reference to a glandular enlargement in the neck, and the advice given to him was to have it removed immediately; this he at once acceded to, and the tumour was removed from the front of the carotid sheath. Twelve months afterwards a second tumour had to be removed from the posterior triangle of the neck, where it lay in contact with the brachial plexus and subclavian artery, and this proved on microscopic examination to be an undoubted sarcoma. About the middle of last summer he himself discovered that there was a recurrence in the mesenteric glands, and a consultation between a London surgeon and his Glasgow friend resulted in a decision that nothing further could be done. No position can be more terrible to a strong man than to have to wait month after month for death, with the certainty that there is no possibility of averting the dread issue. Fortunately for him, his old friend and fellow-student Dr. Aikman, of Guernsey, took him over to that charming island in the month of November, and there watched over him with the most tender solicitude. The change of air and scene, the pleasant drives, and above all, the society of his old friend, proved of great benefit to him; and he waited on with Christian fortitude and patience till the final summons came on the 10th May, when he passed away, without pain, at the early age of 45.

He was married in 1885, and his wife was his most patient cheerful nurse throughout his long trial. There are no children to bewail his loss.

MEDICO-CHIRURGICAL SOCIETY OF GLASGOW.—At the annual general meeting of the Society, held on the evening of the 8th May last, the following gentlemen were elected office-bearers for Session 1891-92 :—

Section of Medicine.

Section of Surgery.

Section of Pathology.

Section of Obstetrics.

<i>Treasurer,</i> . . .	{ MR. HENRY E. CLARK, 24 India Street.
<i>General Secretary,</i> .	{ DR. WALKER DOWNIE, 4 Woodside Crescent.

There was also a proposal to alter the hour of meeting from 8.30 to 8 o'clock. After some discussion this proposal was withdrawn, and the hour of meeting remains as before at 8.30.

CAFFYN'S LIQUOR CARNIS.—This preparation of meat has lately been very greatly improved by being flavoured with celery. The taste is now most agreeable, and this meat juice is likely soon to become one of the most popular preparations of its kind now in the market.

MESSRS. BURROUGHS, WELLCOME & Co. have sent us a specimen box of their medicine cachets, which are little cups of rice-paper in which, by means of the mould, unpalatable drugs may be enclosed, and thereafter swallowed without the patient experiencing the disagreeable taste. The accompanying woodcut shows how this is effected. From the same firm we have also received tabloids of their pure willow charcoal—a very convenient mode of administering the drug.



REVIEWS.

Atlas of Clinical Medicine. By **BYROM BRAMWELL, M.D.**
Vol. I. Part I. Edinburgh: Printed by T. & A. Constable
at the University Press. 1891.

WE have little but praise to bestow on this publication of Dr. Bramwell. It is a bold undertaking to attempt to illustrate and describe such a series of diseases as are detailed in the prospectus, including Myxœdema, Cretinism, Addison's Disease, Hodgkin's Disease, Molluscum Fibrosum, Bulbar Paralysis, Ophthalmoplegia Externa, Facial Hemiatrophy, Sarcoma of Skull, Zeroderma Pigmentosa, Small-pox, Melancholia, Monomania with fear, Religious and Suicidal Melancholia, and Mania. Judging from this first part the undertaking promises to be a successful one.

This part in the letterpress gives descriptions of three diseases—Myxœdema, Sporadic Cretinism, and Friedreich's hereditary Ataxia. The illustrations consist of seven plates and a number of woodcuts. The plates are of several sorts. We have, first, three coloured illustrations of myxœdema, and it must be said that they are most life-like representations, showing, without exaggeration and with admirable detail, the characteristic appearances of this disease. Each plate is

accompanied by a description of the case. Plates IV and V illustrate the subject of sporadic cretinism. They are the reproductions of chalk drawings of cases partly the author's own, and partly derived from other sources. They are altogether striking and satisfactory. The next two plates are not in their order, and are unaccompanied by letterpress descriptions. We have first a photographic reproduction, excellently rendered, of a case of what the author calls in the plates lymphadenoma, but which is designated in the prospectus by the better name of Hodgkin's disease. It shows great glandular enlargements in the neck, axillæ, and groins. The last plate is a clever chalk drawing illustrating melancholia with fear.

In regard to the text we may say for one thing that it is eminently readable. Dr. Bramwell does not scruple to make use of a colloquial style even in a work of this magnitude, and to take the reader into his confidence. The three subjects of Myxœdema, Sporadic Cretinism, and Friedreich's Ataxia are dealt with in a systematic fashion, their Symptomatology, Etiology, Pathology, Diagnosis, Prognosis, and Treatment being fully dealt with.

Myxœdema is now so well known in this country, especially from the Report of the Clinical Society of London, of which Dr. Ord was chairman, that we need not refer to it here, further than to say that we have in the text a full resumé of what is known on the subject. The connection of myxœdema with disease of the thyroid gland receives due attention.

Sporadic Cretinism is not met with frequently. Dr. Bramwell defines it as the infantile form of myxœdema, and gives a description of the disease, based mainly on a case of his own and one of Dr. Donaldson of Londonderry. If the supposition of the author that the disease is more common than the number of recorded cases would indicate, then a perusal of the text and a careful inspection of the illustrations ought to repay the practitioner.

One of the most interesting sections of this part is that on Friedreich's Ataxia. This disease is liable to be confused with various other nervous affections, and especially with locomotor ataxia. This is brought out in the author's graphic way by a verbatim report of the examination of a patient in the clinique. The students are asked what diagnosis they have arrived at, and the answers are, in turn, "tumour of the cerebellum," "cerebro-spinal sclerosis," "chorea," "spastic paraplegia," "locomotor ataxia," and "the hereditary form of ataxia." The description of the disease is illustrated by

woodcuts representing in turn the lesion in the cord, the general aspect of the patients affected, and some characteristic attitudes of the feet. The article is a long one, and its value is enhanced by a summary of the more important facts which is to be found at the end of it.

One of the most interesting facts connected with this disease is that, like pseudo-hypertrophic paralysis, it frequently attacks several members of the same family, being in this sense a family disease. There is also, however, evidence that it may be transmitted from parents to children, and this may occur through many generations. The author gives three genealogical tables illustrative of these facts, the most important of which refers to the Blattner family, and is taken from Rüttimeyer's paper in *Virchow's Archiv*, vol. xci. So far back as 1710 there was married a man named Blattner, whose gait was so peculiar that he was called by the nickname of "The Stumbler." Up till the year 1840 this nickname remained attached to this man's descendants. At the present time there are four families directly descended from the original "Stumbler," and in all these there are cases of ataxia. In one family there are 10 children, of whom 3 are ataxic; in a second, 7 children, and 1 ataxic; in a third, 10 children, and 3 affected; and in the fourth, 7 children, and 1 ataxic.

We trust that in our remarks we have sufficiently indicated the character and merits of this work, which highly commends itself both to the scientific observer and the general practitioner, but especially to the latter. We may add that it is intended to issue the atlas in yearly volumes, each of which will consist of four parts, and will contain 30 plates. All the plates for the first two yearly volumes have already been prepared, and are now on the stone. The moderate price of the work places it within the means of the great body of the profession, and we bespeak for it a large circulation among our readers.

A Treatise on Rheumatism and Rheumatoid Arthritis. By ARCHIBALD E. GARROD, M.A., M.D., M.R.C.P., Assistant Physician to the West London Hospital. London: Charles Griffin & Co. 1890.

THE publication of this volume will serve to connect the name of Dr. Archibald Garrod with rheumatism much in the same way as his father's name is associated with gout. Sir Alfred Garrod's work on gout has taken a first place in the literature of that subject; this volume seems to us deserving of a some-

what similar place in the literature of rheumatism. But there is, from one point of view, a considerable difference in their respective claims to such position—namely, in regard to the amount of original matter they contain in the way of theory, experiment, and observation; the work on gout being markedly original, while the same cannot be said of this volume on rheumatism.

Dr. Garrod divides his treatise into two parts, the one dealing with Rheumatism, the other with Rheumatoid Arthritis, which he regards as essentially different in nature from true rheumatism. He finds great difficulty in defining the province of true rheumatism, largely owing to the loose way in which the term "rheumatic" is employed. Taking, however, acute articular rheumatism as the typical rheumatic affection, he refuses to recognise as rheumatic any morbid conditions which are not occasionally met with in such obvious connection with articular attacks that they must be regarded as manifestations of the same morbid process. He therefore excludes such affections as so-called gonorrhœal and pyæmic rheumatism, muscular rheumatism, &c.; and yet, to the advantage of his readers, he devotes one or two chapters to the consideration of these lesions. On the other hand, he includes chorea, erythema, &c., among the lesions deservedly claiming to be rheumatic. In this way his work covers a wide field, with chapters devoted to pericarditis and endocarditis, pneumonia and pleurisy, cerebral rheumatism, rheumatic insanity, peripheral neuritis, cutaneous manifestations of rheumatism, sore throat, subcutaneous nodules, &c. To all this we take no exception; for, while endless discussion might be raised on the application of his definition, there can be no doubt that the value of the book is greatly enhanced by his discussion of these side-lights of rheumatism.

A chapter is given to Rheumatism in Childhood, where, as elsewhere, and as also in the writings of Cheadle and others, we are struck by the importance attached to the manifestations of rheumatism as it occurs in children in respect to the recognition of what is and what is not truly rheumatic. We are, moreover, forced to the conclusion that rheumatism in its various manifestations must be more common among London children than with us; or we must conclude that we frequently fail to recognise it when we see it.

Dr. Garrod discusses very fully the various chemical, nervous, and infective theories of the pathology of rheumatism; and, while regarding the question as still open, he leans to the view that the theory of an infection from without accounts

most satisfactorily for the various phenomena of the disease. The tendency of the present day seems all in the direction of explaining everything by bacteria.

Rheumatoid arthritis he looks upon, not as a systemic disease, but as arising from a disturbance of the nutrition of the joints which may be due to a variety of causes, local or constitutional. In point of fact, he recognises that various disorders are embraced under this name, and he accordingly describes them separately. He even admits that some cases of rheumatoid arthritis do follow after truly rheumatic attacks; and we must therefore attach all the less significance to his belief in the essentially different natures of rheumatism and rheumatoid arthritis. How would he explain the co-existence of typical rheumatoid arthritis with typical subcutaneous nodules, if the latter, as he seems to believe, are pathognomonic of the rheumatic diathesis?

The treatment of rheumatism in all its forms is brought up to date, the most recent anti-rheumatic drugs being referred to; while due space is given to the discussion of the value of the salicine compounds, with a strong bias in their favour.

We can cordially commend Dr. Garrod's book to our readers. From what has already been said they will have learned that it is a very full one. Dr. Garrod has seen much of rheumatism; he has made himself thoroughly familiar with the extensive literature of the subject (of which he gives a good bibliography); and in the work before us he shows that he has both digested what he has read, and has brought to bear on the various questions he discusses a ripe experience and an acutely critical faculty; with the result that he has presented this complex subject in a clear and attractive form.

Micro-organisms, with Special Reference to the Etiology of the Infective Diseases. By Dr. C. FLÜGGE. Translated from the Second Edition by W. WATSON CHEYNE, M.B. London: The New Sydenham Society. 1890.

WE have especial pleasure in bringing this monograph under the notice of our readers. It is written with the definite object of describing the form and vital characteristics of micro-organisms, in so far as they have a direct or indirect interest, from the hygienic point of view. This object is accomplished in such a comprehensive manner that a perusal of the work cannot fail to convince the sceptical of the great part which bacteria play not only in producing disease, but in the whole economy of nature; and it cannot fail to

give the student clear ideas of the aim and scope of bacteriology. The plan of the work is well sketched in the author's introduction, and we cannot do better than give it in his own words. There is, "in the first place, a short historical sketch of the development of our knowledge with regard to the ferments and parasites during the last few years. Then follows a description of the form and mode of development of those micro-organisms which are important from a hygienic standpoint, and also a short morphology and classification, a knowledge of which is indispensable for the comprehension and the further successful study of these bodies, so difficult to recognise and to distinguish one from the other. Nor is the biology of the micro-organisms less instructive; hence the third part deals with the general conditions of life of the lower fungi; in the fourth are described the results of their life, their tissue change, and energy, as well as their action as exciting agents of fermentation and of parasitic diseases; and the fifth chapter deals with the conditions of decay of the micro-organisms, and with the means which cause their enfeeblement or death. In the sixth and seventh divisions the points which are of special interest in hygiene are referred to; in the sixth the distribution of the various micro-organisms in our surroundings, in air, soil, water, food, and dwelling; and in the seventh there is given a digest of the conclusions to which we must come with regard to the etiology and prophylaxis of the infective diseases. The contents of this chapter include the discussion of the external sources of infection, of the local and seasonal predisposition to infective diseases, of the mode of entrance of the infective agents into the organism and their fate in the body, of the means by which it is possible to obtain protection against the danger of infection and to overcome it, of immunity and protective inoculation of the general prophylactic rules, and of the modes of disinfection suitable in practice. Finally, in the last chapter there is added a sketch of those methods of investigation which are most useful in the study of this most difficult department of hygiene."

In works of this kind technical details bulk so largely, as a rule, that it is difficult for the general reader to sustain an interest in the subject. Such objection does not present itself in the volume before us, and the systematic plan followed also not only sustains, but increases the interest. The chapters bearing upon the gradual development of the germ theory, biology, fermentation, and pathogenesis display much originality of thought.

The translation is admirably done by Mr. Watson Cheyne.

The Urine in Health and in Disease, together with its Chemical Examination. By H. AUBREY HUSBAND, M.B., B.Sc., author of the *Student's Handbook of the Practice of Medicine*, &c. Plates. Second edition. Edinburgh: E. & S. Livingstone. 1891.

THIS booklet may occasionally be of service in the way of reminding a man of something he has for the moment forgotten in regard to urinary examination; but it belongs to a class of books that no one could recommend to a student anxious to know his work. It is "condensed"—i.e., it is a cram-book, and the effect of this condensation may be seen in the following extract—a fair sample:—

"CHLORIDES.—*Health*—These vary considerably, and never form deposits.

"*Disease*.—Increased in pneumonia, as soon as resolution commences; in ague, during the hot and cold stages. Diminished in all febrile diseases. In pneumonia, during hepatization; acute rheumatism with joint effusion, and in pleurisy with effusion."

MEETINGS OF SOCIETIES.

GLASGOW PATHOLOGICAL AND CLINICAL SOCIETY.

SESSION 1890-91.

MEETING V.—9TH FEBRUARY, 1891.

I.—CASES ILLUSTRATING VARIOUS RESULTS OF UNRECOGNISED PELVIC DISEASE.

By DR. J. K. KELLY.

CASE I. *Purulent Endometritis and resulting Localised Purulent Peritonitis, with Secondary Abscesses in the Liver; no Pyæmia.*—M. M., a domestic servant, aged 18, was admitted complaining of pain in back and belly; history of pleurisy in left side on two occasions; no spit, little cough, hectic temperature; menstruation regular, latterly scanty, and at times delayed; vomiting. Apices of lungs considered healthy; dulness in left back; a little dulness at right base; slight albuminuria, probably due to menstrual blood; no family history of tubercle; no diarrhœa.

When the pelvic organs were removed and handed to me their condition was as follows:—Uterus of normal size; slight erosion on posterior lip of os; tissues of pelvis all matted together, with small purulent collections here and there. Both Fallopian tubes contain pus, but are only slightly dilated; a considerable abscess is in the left lateral pouch of Douglas, apparently connected with the left Fallopian tube and ovary.

In connection with this description of the pelvic organs after removal, we may read Dr. Lindsay Steven's description of their condition as he found them at the *post-mortem* examination:—"The lower margin of the great omentum is bound down to the brim of the pelvis. On separating the adhesions to the pelvic brim pus escapes. The whole free cavity of the pelvis—viz., Douglas' pouch, and that between uterus and bladder, is the site of an intense purulent peritonitis, the pus being confined *in loculi* formed by adhesions."

... "The greatest formation of pus has taken place immediately around the uterus, and all the facts of the case point to a pelvic purulent peritonitis set up by an extension from 'below.'" ... "The rectum and anus are quite healthy."

Such being the pelvic condition, let us turn now to the other lesions found in the abdomen. These are chiefly situated in the liver and spleen. "The liver is found to be the seat of very numerous large ragged abscesses, containing a mixture of bile and pus. One or two small abscesses are also seen in the spleen." There is also a specimen of a caseous lymphatic gland from the same case.

Practically, these lesions were the only ones found in this body, yet from the thoracic dulness arising from a former pleurisy and a pneumonia of the base, the signs of hectic fever were interpreted as indicating phthisis pulmonalis. Is it possible that other similar cases may give rise to a similar diagnosis?

From the conditions found in the abdomen, can we construct a history of the case? Perhaps we may do so in some such way as this. This young girl had in some way contracted a purulent endometritis, this had passed into the Fallopian tubes, and especially into the left, and the pus passing out into the peritoneum had caused a localised purulent peritonitis. The collections of pus formed here infected the whole neighbourhood, but did not give rise to a general peritonitis. Instead of this the pus organisms entered the portal circulation, and were carried into the liver, there giving rise to the secondary abscesses found in such numbers. A small number

had evidently also entered the splenic vessels, but none had entered the general circulation at the time of death.

Such being the probable history, it is clear that had a diagnosis been made when the disease had gone no further than a salpingitis, or even a pelvic abscess, the case was one which might have been successfully treated.

CASE II. *Abscess of Liver Secondary to Pelvic Abscess of obscure origin.*—J. W., dairymaid, æt. 27. The sigmoid flexure crosses over Douglas' pouch, and is adherent to the fundus uteri. The parts anterior to this are all matted together in one mass, the only distinct part being the upper edge of the fundus. On separating the adhesions in Douglas' pouch a small cavity is reached, about the level of the isthmus uteri, containing pus. This is found to communicate with the sigmoid flexure at its bend into the rectum, and also with the rectum about two inches lower down. On opening the bladder, a small perforation is found on its posterior surface, also communicating with the pus-containing cavity in Douglas' pouch. The processus vermiformis is also traced down into this cavity as it extends to the right side, and the lower end is found to be completely eaten away. The right ureter is here involved in the adhesion, but is not perforated. The bladder is drawn to the right side by the adhesions. On cutting down on the left ovary, the Fallopian tube being indistinguishable, a large cavity—about a duck's egg in size—is opened full of thick bluish white pus. The wall of this cavity seems formed of ovarian tissue, as various remains of corpora lutea are found all round it. There are several smaller chambers communicating with the main chamber, and one of them leads towards and into the first cavity found in Douglas' pouch. The uterus is rather small, the endometrium pulpy, the cervix occupied by a larger quantity than usual of tenacious mucus. The uterine openings into the Fallopian tubes are of normal size, and the tubes themselves, so far as they can be traced, are normal.

This pelvic condition was connected with an enormous abscess of the liver, and the case had this history. Admitted to hospital on 14th February, 1890, complaining of pain across stomach and vomiting of two days' duration. On date of admission, abdomen seemed normal. On night of 15th, complained greatly of pain over hepatic region. On 16th, hepatic dulness was 5 inches in nipple line; the temperature ranging since admission from 102° to 104°. Liver gradually increased in size, was 6½ inches on 23rd February, and fully 7 inches on

28th February in the nipple line; temperature ranging from 101° to 103°. Since beginning of March temperature has been normal, with a temporary rise to 102° on 10th March. Fluctuation was detected on 9th March, pus on 10th. Operation was done on 11th, and she died on 13th March.

There can, I think, be little doubt that the hepatic abscess was secondary to that in the pelvis. The question with regard to the latter is whether it originated in a hæmatocele, in a rectal ulcer, or in an ovarian inflammation. In either case, however, it was evidently a condition which, if detected, could have been dealt with by ordinary surgical means with a probability of success. These two cases of hepatic abscess following on pelvic abscess are apparently specimens of a rare condition, as I have found no record of any others so far as I have gone. Hepatic abscess is not infrequent as arising from ulcer in the rectum, or following on operations on the rectum or about the anus for hæmorrhoids and cancer. But it seems very unusual to have hepatic abscess in cases of pyosalpinx and suppurating hæmatocele. Perhaps, however, less attention has hitherto been given to *post-mortem* examinations on females than on males.

CASE III. *Generalised Cancer of Peritoneum from Cancer of Ovary; Columnar-celled Character everywhere present.*—C. H., farm servant, æt. 45, admitted 7th December, complaining of abdominal dropsy of five weeks' duration; tapped several times; no cause for dropsy discovered till 3rd February, 1890, when a large tumour was found in the abdomen (right hypochondriac and lumbar regions); supposed not to involve liver. Small tumours found in skin; one excised, and found to be cancerous. Roof of pelvis formed by immensely thickened peritoneum, passing in a curve from the anterior wall to Douglas' pouch, the position of the fundus uteri being indicated merely by a small secondary curve. Douglas' pouch is occupied by nodules about the size of cherries and plums, the largest of which, towards the left side, is evidently a cystic portion of the ovary with the fimbriated end of the tube attached to its upper surface. The rectum shows no affection of its mucous surface. Douglas' pouch, on being opened, is found filled with white deposit, which forms the adhesions between uterus and rectum, and is continued into the nodules above mentioned. The ovary on the left side is completely gone. On the right side are some remains of ovarian tissue, but it also is mostly transformed into cancerous tissue. The walls of the uterus are greatly thickened. Cavity occupied

by a small soft polypus attached to posterior wall. Fallopian tubes occupied by same white cancerous material as the nodules in the ovaries.

In this case there was generalised malignant disease of the peritoneum, with large nodules in the omentum. The cancerous growth had attacked the diaphragm and passed through to the pleura, producing on the left side a severe pleurisy, with effusion, which had caused total collapse of the left lung. Carcinomatous nodules also were found on the skin.

The conclusion of the pathologist was that the peritoneal condition was evidently secondary to that of the ovary. The columnar-celled character marked the cancerous growths everywhere.

In this case, also, although with a disease evidently so malignant as it was in this case, we must speak with all reserve, it is possible that an early diagnosis might have given at least a remote possibility of treatment.

The practical lesson to be derived from these three cases has been already indicated. There is a danger, no doubt, that those who are chiefly occupied with the subject of pelvic pathology may attribute too much importance to that subject, but while avoiding that danger, we should not fall into the opposite one of neglecting pelvic pathology too much. In our profession, and as a result among the public also, it is the latter danger that has been hitherto mostly incurred, and cases such as these illustrate the necessity for recollecting that while the female is liable to the same diseases as the male, her pelvic organs are liable to diseases for which there is no counterpart in the male pelvis. It is Schultze, I think, who would require a pelvic examination by a specialist of all hospital cases, for both scientific and practical purposes. While this is perhaps going too far, it is not asking too much to require that a special interrogation regarding pelvic functions should in all cases be made, followed by a special examination wherever there is any indication of irregularity there.

Dr. J. Lindsay Steven said that the cases, when they occurred, had produced a profound impression upon his mind as well as upon that of *Dr. Kelly*, with whom he quite agreed that, had a pelvic examination been made, the termination in hepatic abscess might have been avoided. He also called attention to the fact that serious peritonitis might arise in the course of purulent catarrhs of the utero-vaginal tract, and alluded to the case of a girl, aged 4 years, whom he had seen in consultation with *Dr. Headrick* of Dennistoun, where the only cause he could

suggest for a rapidly fatal general peritonitis was a rather profuse vaginal discharge. (See *Lancet*, vol. i, 1891.)

II.—SPECIMENS ILLUSTRATIVE OF CALCULOUS DISEASE.

By PROFESSOR GEORGE BUCHANAN.

(a) Bladder showing condition of the prostate after lithotomy six years before.

(b) Kidneys from the same case, one full of calculi of large size, the other from which a stone was removed eighteen months before by nephrectomy.

Professor Buchanan showed a stone weighing $1\frac{1}{2}$ oz. which had been removed by rectangular lithotomy from a man, W. G., æt. 25, six years ago; also a renal calculus removed by Dr. Renton from the same patient four and a half years after; also the urinary organs of the same patient, who died in December, 1890, after a slight operation to extend the sinus left after the nephrotomy. Death was caused by uræmic poisoning and collapse, the cause of the symptoms being found at the autopsy, when the other kidney was discovered to be completely sacculated, each sacculæ containing an oxalate stone. These were about a dozen in number, and varied from the size of a bean to that of a filbert. A full account of the case will appear in the *Journal*.

(c) Calculus which had been arrested in the urethra, and removed by long forceps.

P. K., æt. 50, a labourer, and a native of Ayrshire, was admitted to Ward III, Western Infirmary, on 14th October, 1890, with retention of urine. His symptoms date five years back, when a pain of a sharp, continuous character arose in the region of his left kidney. It was confined to that part, lasted for a few weeks, and then disappeared, recurring only occasionally during the next five years. No other symptoms whatever were present. Two months before admission, however, this pain returned in, and was confined to, the same part. It became very severe, and one night it was specially so, and then entirely disappeared. About six weeks after micturition became more frequent, and during the act the stream often stopped suddenly and then began again. He never noticed any blood in his urine, and had only a feeling of uneasiness in his epigastrium.

A few days before admission he felt, while making water, as if something had got into his urethra. On admission a No. 7 catheter could be passed over the stone, which was found firmly impacted in the membranous part of the urethra.

Professor Buchanan removed it by means of the urethral forceps. The calculus was about the size and shape of a bean, and consisted of oxalate of lime. No oxalate could be found in the urine. Patient was dismissed well on 24th October.

(d) Several calculi, some of which had been impacted in the urethra, and some retained in the bladder; perforation of urethra, urinary infiltration; lithotomy.

A. M., æt. 62, a fisherman, and a native of Argyleshire, was admitted to Ward III, Western Infirmary, on 15th December, 1890, suffering from extralysation of urine.

His urinary troubles date 20 years back. At that time he passed per urethram a small stone. For a few days previous he had pain on micturition, with sudden stoppage of the flow of urine. Nothing occurred again until ten days before admission, when, on lifting a heavy weight, he felt something give way, and experienced immediately after great difficulty in making water. About five days after his scrotum began to swell, and the swelling on admission being very extensive, was immediately relieved by incisions.

The next day Professor Buchanan, by means of the urethral forceps, removed a small stone firmly impacted in the membranous part of the urethra, and which had evidently ulcerated through the mucous membrane, causing the extralysation. On examination per rectum it was found that the membranous urethra, and also in part the prostatic, were the seat of several small stones, and on an endeavour being made to remove them with a small scoop lithotrite, some slipped back into the bladder. As the perineum was still somewhat infiltrated, and the incision to relieve tension had been made much in the line of lateral lithotomy, a curved staff was introduced, the incision referred to above extended, the operation of lateral lithotomy completed, and several small stones removed. The patient made a good recovery.

III.—(a) VERY LARGE OBSOLETE TUBERCULAR CAVITY IN THE LUNG; (b) LARGE ACTIVE CAVITY WHICH SIMULATED PNEUMOTHORAX.

By DR. JOSEPH COATS.

Dr. Joseph Coats showed a specimen of healed cavity of the lung, and, for contrast, a lung with a large recent and active cavity. The specimen and case are fully recorded in the *Hospital Gazette* for 11th April, 1891.

The right lung was shown, in which the entire pulmonary tissue had been destroyed and excavated so as to yield one

very large cavity and several subordinate ones. With this extensive excavation there was no evidence of recent tuberculosis. The cavities were all lined with well-formed connective tissue, which was smooth on the surface, and showed no ulcerative or tubercular softening. The left lung showed at the apex evidences of a tuberculosis, less in degree and also completely healed—that is to say, there were pigmented cicatrices with cretaceous matter in their midst. The history of the case was that of an acute phthisis with fever, about four years before death. For this he was treated in the Western Infirmary. He remained ill for about eighteen months, and then slowly recovered, being able for the last two or three years to resume work with considerable feeling of restored health. He died in consequence of a lobular pneumonia of the remaining portions of the left lung, this pneumonia being probably the result of the inhalation of products from the large open cavities in the right lung.

The other case presented such extensive excavation that it was regarded, during life, as probably a case of pneumothorax. One cavity occupied the entire upper lobe, and there was also a very large one in the lower lobe. All the cavities were rough and ulcerated, and contained abundant tubercular bacilli.

IV.—HYDRONEPHROSIS OF PECULIAR ORIGIN.

By DR. JOSEPH COATS.

(a) From constriction of the ureter by an aberrant renal artery.

(b) In which the ureter communicated with the pelvis at a sharp angle and obliquely, the orifice being valved more or less. (See *Glasgow Medical Journal* for May.)

MEETING VI.—9TH MARCH, 1891.

The President, DR. DAVID NEWMAN, in the Chair.

I.—EXOSTOSIS CARTILAGINEA OF THE SCAPULA.

By DR. G. T. BEATSON, M.D.

Dr. Beatson showed the specimen which had been removed from the deep surface of the upper angle of the scapula. The patient was a governess, aged about 30. For about a year previous to the discovery of the growth she had suffered from

pain down the arm, and more especially along the ulnar border of the fore-arm, and latterly had experienced a sensation as of something hitching on the upper ribs, with occasionally an audible clicking sound on certain movements of the limb. The tumour was rather broad based, covered on its most prominent surface with a layer of cartilage which showed numerous small bosses. A bursal sac surmounted the most prominent part of the cartilaginous surface. The bony part showed a cancellous structure.

Dr. Rutherford thought that exostoses of the flat bones themselves were usually hard. He pointed out that the specimen under consideration was from the neighbourhood of an epiphysis—that, namely, forming the vertebral border of the scapula. He suggested that this might be as truly describable as *exostosis bursata* as those which had been described in the long bones in the neighbourhood of joints. These, in some cases at all events, grow not from the epiphysis, but from the juxta-epiphysial region of the diaphysis, so that their supposed relation to the joint is by no means obvious. The bursæ may form very large cysts containing loose bodies. The bosselated surface of the cartilage in the present case suggested the possibility of such a condition coming into existence.

Dr. Coats said he was interested from an etiological point of view. He could understand the origin of such growths on Cohnheim's theory, but did not see what such exostoses had to do with a bursa.

Dr. Rutherford pointed out that the theory of *exostosis bursata* was that these were produced, not merely by aberrant cartilage, but aberrant joint-cartilage. The specimen was of interest in that it occurred not in the neighbourhood of any joint—still less so, that is to say, than those which occurred near the ends of shafts of long bones.

II.—WHITE INFARCTION OF THE PLACENTA.

By DR. W. L. REID AND DR. JOSEPH COATS.

DR. REID read the following report of a case of white infarction of the placenta, where the foetus was still-born:—*Mrs. R.*, æt. 32, born and brought up near the sea, and always strong and well, except for an attack of enteric fever when about 10 years of age. Married 3 years ago, and a year after had a premature still-born child, supposed to have been about the eighth month. The labour was easy and natural, and the placenta was not examined. About 10 months ago she again became pregnant, and about the eighth month began to feel

less foetal movement, and labour came on a fortnight afterwards, and went on very slowly, lasting for 36 hours. Slight convulsions having shown themselves, and the urine being found to contain a considerable quantity of albumen, I was asked to see her, and delivery was easily effected by the forceps. The child had apparently been dead for at least some days.

The object of bringing these specimens to night was to draw out the opinion of any of the members who may have paid special attention to the subject. I have, during the last few years, seen quite a number of cases in which healthy women gave birth to children dead two, three, four or more days before birth—children in whom nutrition was apparently perfect—the cause of death being unknown, and labour usually rather premature. As regards syphilis, all I have to say is of a negative sort. I am now pretty sure that rheumatism has something to do with the condition. It has happened in many cases where there could be no suspicion of syphilis, but where there was a very marked tendency to rheumatism.

In the unavoidable absence of DR. COATS, the following note was read for him by DR. R. M. BUCHANAN, who demonstrated the specimens:—

The communication was to be regarded as a preliminary one. Dr. Coats had had several specimens sent to him by Dr. W. L. Reid, in which a child had been still-born, and the placenta showed a number of peculiar white wedge-shaped consolidations. The appearance of these suggested the well known pale embolic infarctions of the kidneys and spleen, and so the lesion was naturally referred to as "white infarction of the placenta." Like the embolic infarction, this constituted an absolutely solid fleshy piece of tissue, which contrasted greatly, to the naked eye, with the spongy villous tissue of the rest of the placenta. In some cases the infarction was not white but red, and suggested hæmorrhage. In other cases the central parts were slightly softened, as if a subsequent change were occurring in the tissue. The wedges vary considerably in size from small up to two or more inches in diameter. Sometimes they extend through the whole thickness of the placenta, but the smaller ones do not, and these seem to be associated with the maternal rather than the foetal side of the placenta. In two cases the placenta was injected from one of the umbilical arteries, with soluble Prussian blue in gelatine. The injection ran well into the vessels in the villi of the foetal placenta, but not into those of the infarctions. At most there was one or two larger vessels in the infarction partly injected.

Microscopic specimens were also shown. From them it appeared that the tissue in the wedge-shaped areas is necrosed, the evidence of this being that though the papilliform structure of the foetal part of the placenta is visible in these areas, there is an absence of the proper nuclear staining. In injected specimens, also, the villi in these areas contain no capillaries. This is the more instructive as sometimes in the midst of the infarction there is an injected artery, and the wall of the vessel shows nuclear staining, an indication that it was alive. This is another evidence that the disease primarily affects the maternal side of the placenta.

Dr. Coats did not venture on any discussion of the pathology of the lesion. The indications already mentioned indicate a disease of the maternal structures, and this is confirmed by the fact that the child, although still-born, is usually fully developed and even well nourished.

The object in making this communication is to excite interest and induce members to send specimens to Dr. Coats. He requests that such specimens should be accompanied by notes of the case, including period of pregnancy, age of patient, number of pregnancies and their character.

Dr. M'Phail desired to know the renal conditions in Dr. Reid's cases. He also had had cases of the sort described, but the children were not always healthy. That morning he had a case, the patient a primipara six months' pregnant; child peeling, and with external hydrocephalus and spina bifida. There was no reason to suppose syphilis, and no other cause was known.

Some of the cases have had what might be described as renal insufficiency, though not as renal disease. The urine was high-coloured, with uric acid, uratic and oxalatic deposits; and the cases where the oxalates are persistent were the worst. Albumen was present in slight traces, but not in such amount as to suggest renal disease, unless perhaps pyelitis. No rheumatic history. The kidney condition, if not permanent, was at least liable to be reawakened in each pregnancy. Dr. M'Phail had had cases of white infarction in which he noticed this condition of renal inadequacy. He was bound to add, however, that in several cases of puerperal eclampsia the placenta, examined with great care, did not in any case show these lesions.

Dr. Reid, in reply, referred to an inquiry into the subject made by Dr. Barnes some time ago. Not much of a positive sort had been arrived at. As to the association of the lesions with renal insufficiency, he confirmed Dr. M'Phail's statement that white infarction of the placenta was not associated with

marked renal disease or with eclampsia. In the latter cases we might regard the death of the child as due to the high temperature which might be present, or to asphyxia during the convulsions.

Dr. R. M. Buchanan called attention to the fact that conditions similar to those demonstrated have been described by different authors under various names.

III.—OBSERVATIONS ON CHRONIC INFLAMMATORY LESIONS OF THE BRONCHI AND ON BRONCHIECTASIS.

By A. G. AULD, M.D.

Dr. Auld showed microscopical preparations illustrative of observations in chronic inflammatory lesions of the bronchi and bronchiectasis. Dr. Auld's paper (illustrated) appeared in the *Glasgow Medical Journal* for April.

IV.—CASE OF REMOVAL OF A PIECE OF METAL FROM FUNDUS OF EYE AFTER BEING EMBEDDED FOR EIGHT MONTHS.

By DR. MEIGHAN.

The specimen was from the patient shown at the December meeting. A cicatrix at the outer sclero-corneal margin showed the point of entrance. Patient had been attending hospital for months, and complained of pain, especially when he moved about, so great that he could not continue at work. When he came to Glasgow Dr. Meighan found what he considered to be a chip of metal in the middle line, just below the optic nerve entrance. The retina was separated in its lower half, and some serous effusion had taken place in the separated part, and covered the black body from view. This was when the patient was shown in December, so that it was scarcely possible to convince members of the presence of the foreign body. Dr. Meighan had operated after some hesitation, in view of opinions expressed by Adams and others (*Ophthalmolog. Trans.*)

Still the man was suffering so much as to be unfitted for work, and was anxious to have something done. Often in such cases, at the time of the accident, vitreous escapes, the eye shrivels, and enucleation has to be done.

In this case the operation was as follows:—Incision at equator between external and inferior rectus, horizontally and obliquely, so that when the magnet or other instrument was withdrawn the flaps closed and prevented any escape. With the first insertion of the magnet the body was got to the lip of the wound; little escape of vitreous. The magnet

was introduced a second time, and the small piece of metal came out with it. One stitch brought the conjunctiva and sub-conjunctival tissue together. The patient can now read medium type, and thus has got a fairly good eye. The hammer had been examined, and the small piece missing from it corresponded to the body shown, which measures one-eighth by one-sixteenth of an inch, and weighs 10 grains. Patient still progressing favourably.

Dr. Meighan also showed an eye with a piece of metal which, from its size, he supposed weighed about half an ounce. The patient, a rivetter, was chipping a rivet, when a piece flew into his eye. He lost sight in the eye at once, blood and some fluid flowing down his cheek. The same evening he came to the Eye Infirmary. The eye was much swollen, and patient resisted examination. Dr. Meighan did not see the case till the second day. The edge of the corneal wound united, and the swelling subsided. A week ago sympathetic mischief developed in the other eye, and as there was shrivelling of the wounded eye it was enucleated, and the piece of iron was found. This case showed how a piece of metal might become encapsuled in the eye. The patient now feels very well.

Dr. Newman asked if the metal had been cold.

Dr. Meighan—It was cold.

Dr. Renton called attention to the fact that the operation, in the first case, was done only a fortnight ago. Appearances of shrivelling might show themselves, or sympathetic disturbances arise. He referred to a case which he had seen operated on by this method by Mr. Snell of Sheffield, with satisfactory result. Dr. Renton had often been struck by the long time during which a foreign body might remain in the eye and cause no disturbance. He narrated a case in which there was a blow years before, with an inflammatory condition supervening. Enucleation was done, and a piece of coal was found embedded in the fundus. The only injury of which history could be obtained was twenty years ago. The exact localisation of the foreign body has to do with the occurrence or non-occurrence of irritation. A gamekeeper firing a gun felt something strike his eye—possibly a chip of the "cap." A hair-like band was seen across the centre of the pupil; but there was no irritation, merely interference with sight. By operation the foreign body was removed, and found to be a hair from the eyelash. Again, in a child he had seen a prickle from some plant remaining in the cornea for weeks without irritation. When, however, the body goes into the ciliary

region, or causes suppuration, pain and irritation come on, and it must be removed.

Dr. Rutherford thought that this was a case of great interest, and hoped that the further history of the patient would not be lost to the Society. The operation might not permanently relieve the symptoms, and the effect of the incision and its cicatrix might themselves be matters of consideration.

Dr. Meighan promised to bring the patient before the Society at a later date.

GLASGOW SOUTHERN MEDICAL SOCIETY.

MEETING 2ND APRIL, 1891.

JAMES ERSKINE, M.A., M.B., *in the Chair.*

I.—CASE OF ACUTE YELLOW ATROPHY OF THE LIVER.

BY DR. JOHN LINDSAY STEVEN.

Dr. J. Lindsay Steven exhibited specimens from, and related the history of, a case of acute yellow atrophy of the liver (malignant jaundice).

Dr. Workman said that on looking at the drawing and at the specimen, one got a very feeble idea of what was the condition of things at the time of the *post-mortem*. Though he had seen many *post-mortems*, he had never seen a case of acute yellow atrophy before. The liver was small, and its colour was in parts a brilliant yellow, which contrasted with the deep reddish-brown appearance of the remainder. In this case we had an extreme jaundice, so that there was evidently a large formation of bile going on. At the *post-mortem* there was found extreme destruction of liver cells. The question therefore is, have the liver cells anything to do with the formation of bile? His teacher of physiology, Professor Redfern of Belfast, believed that the liver cells had nothing to do with the formation of bile, but that their duty was the formation of glycogen, and that the bile is produced in the interlobular bile ducts. In the specimen the bile ducts are seen in the red parts in their normal condition, while the liver cells are destroyed. The peculiar thing in this condition is that the acute inflammatory disease appears to be chiefly, not in the liver cells themselves, but in the connective tissue of the liver. The red portion consists

very largely of leucocytes, which have enormously increased, and have crushed out the life of the liver cells. The disease, therefore, would seem rather to have been one of interstitial than of parenchymatous hepatitis.

Dr. Clerk said he had never seen one of these cases. As regards the colour of the liver he would ask was it not possible to be due to *post-mortem* staining by the bile. He would be very chary of putting this colour down to anything but *post-mortem* changes.

Dr. Thomas F. Gilmour said he had a notion that these cases are not quite so rare as was supposed. If we had all opportunities of verifying the cases of fatal jaundice, which we have to deal with in private practice, this condition of things would probably be found. *Dr. Dougall*, he knew, had seen a case which was returned to the Registrar as this, but no *post-mortem* was obtained. He had had a number of cases of pregnant women who died of jaundice, and looking back upon them now, he would be inclined to put them down as cases of this kind.

Dr. James Hamilton asked if the brain had been examined, and why the family history had not been taken with a little more detail, such as regards cancer, &c.

Dr. Lindsay Steven replied. *Dr. Clerk* had suggested that possibly *post-mortem* changes might account for the staining, and in reply to that he would call attention to the fact that the *post-mortem* was made very early. He (*Dr. Steven*) was not accustomed making *post-mortems* till twenty-four hours after death, and in such cases he had never seen this staining. The yellow portions of the liver, which were the healthiest parts, might possibly owe their colour to deep bile-staining in the same way as the skin and other tissues were deeply bile-stained.

He thought it quite likely that a number of cases of this disease may have escaped notice. Most of those who have written upon this subject say that it is far more common below the age of thirty and among pregnant women, and the more advanced the age the less likely is it to be this disease. The brain was not examined, as the friends would not permit it. The family history was not so particularly investigated as he would have liked.

II.—CASE OF ACUTE, RAPIDLY FATAL, GENERAL PERITONITIS IN A CHILD.

By *DR. J. LINDSAY STEVEN*.

Dr. Lindsay Steven read notes of a case of acute, rapidly

fatal, general peritonitis in a child, associated with vulvo-vaginal catarrh. (See *Lancet*, vol. i, 1891.)

Dr. Parry said he had seen a great deal of this, more especially in the children's hospital and also in Belvidere. He believed it caused ophthalmia. He mentioned a case which was brought into hospital suffering from acute peritonitis in which there was an abscess about the pouch of Douglas, and also one behind the rectum. The child had also pericarditis.

III.—DEMONSTRATION OF A METHOD OF STAINING SPUTUM FOR TUBERCLE BACILLI USED IN THE PATHOLOGICAL DEPARTMENT OF THE GLASGOW ROYAL INFIRMARY.

By *Dr. J. Wilson Cameron*.

Dr. Lindsay Steven said it was astonishing, and at the same time amusing, to see the easy and the rough and ready kind of way in which these organisms can be sought for now as compared with the troubles we had eight years ago. He had watched *Dr. Cameron's* work, and he could not but acknowledge the skill with which he looked out for the organisms; but eight years ago *Dr. Coats* and himself spent days and nights in finding what *Dr. Cameron* could now find in three minutes, and it took them months before they acquired ordinary dexterity in searching for and demonstrating the bacilli in the sputum and tissues.

GLASGOW OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.

SESSION 1890-91.

MEETING VI.—26TH APRIL, 1891.

DR. PARK, President, in the Chair.

NOTES ON PLACENTA PRÆVIA, WITH ILLUSTRATIVE CASES.

By *Dr. H. St. Clair Gray*.

Dr. H. St. Clair Gray showed two placentæ—one with a cord 49 inches in length, with several knots on it, and the other 9 inches long. He also showed a number of gynæcological instruments which he had recently brought from Berlin.

Dr. Gray then read his paper on Placenta Prævia, with 36 illustrative cases. Out of that number he had two maternal deaths—one patient dying as he entered the room, and the other twelve hours after delivery, from a return of the hæmorrhage, due to injury received from a drunken husband. Counting one case of twins, he had 16 children born alive, and 21 children born dead, some of which were premature. In 11 of the cases the placenta was central. In 25 cases it was marginal. The treatment adopted was usually that of rapid version and delivery.

Dr. Jardine thanked Dr. Gray for his interesting paper, and congratulated him on his wonderful success. He thought Dr. Gray's experiencing so many cases during such a short time was marvellous. His own experience had been very small, as he had only had two cases, one central and one marginal. Both mothers were saved, but the children were dead.

Dr. Miller said that he had had twelve cases with one death. He had not tried delivering through the placenta, but he thought it would give the child a better chance than by separating.

Dr. Richmond remarked that he had been twenty-two years in the northern district, where most of Dr. Gray's cases occurred, and during that time he had seen only six cases with one death.

Dr. J. K. Kelly regretted that Dr. Gray had ended so abruptly. He should have discussed, *e.g.*, ætiology. The occurrence usually in multiparæ, along with other facts, seems to indicate that it is due to subinvolution, dilatation of the uterus. Hence, treatment of that as a preventative of placenta prævia becomes important. He agreed with Dr. Gray's treatment. Mr. Lawson Tait's proposal of amputation of the uterus was not to be thought of. The cause of the hæmorrhage should have been discussed. He thought it was probably due to uterine contractions preparing the inner os for the dilatation at labour. Separation, except from mechanical causes, was hardly conceivable.

Dr. Cameron stated that no doubt many practitioners failed to detect the attachment of the placenta upon the lower zone of the uterus, or did not attach much importance to it so long as it did not in any way interfere with the course of pregnancy or labour. Practically speaking, placenta prævia was only recognised in two forms, complete and marginal, as these were the conditions in which we met with severe hæmorrhage. Dr. Gray's list comprised those in which the margin of the placenta was several inches from the os, and this explained the

large number given by him. Dr. Cameron thought that, when possible, the pregnancy should be allowed to go on, but advised immediate interference when there was severe or continuous bleeding. Each case required to be judged upon its own merits, as in the marginal form it might be sufficient to puncture the membranes, whilst in complete placenta prævia speedy delivery by version was best. He did not approve of pushing the entire hand through the placenta in this class of cases, or of separating a portion of the placenta, but recommended that, with the hand in the vagina, two fingers only should be pushed carefully through the placenta to effect version. His experience was that the cervix in advanced pregnancy readily yielded to the passage of the child. Little or no trouble was afterwards met with in removing the placenta, and he strongly condemned the use of a curette, but recommended bi-manual massage as a preventive of post-partum hæmorrhage. All these cases required careful after-treatment, as they were likely to be followed by a more or less severe attack of phlegmasia dolens.

ABSTRACTS FROM CURRENT MEDICAL LITERATURE.

SURGERY.

By HENRY RUTHERFURD, M.B., AND DONALD MACPHAIL, M.D.

Multiple Cancellous Exostoses.—Maclean reports on cases of this affection in two generations of one family. In the first, three brothers and one sister were affected, and in the second, the three sons and one daughter of one brother. No history of syphilis, rheumatism, or inter-marriage. Rickets not totally excluded. Maclean does not think that the facts afford any support to the retrograde metamorphosis theory. One exostosis removed by Mr. Norton showed a cancellous structure, was easily cut, and was capped by a thin layer of cartilage. The wound in this case healed rapidly, but at the end of six days there were already three small new-formed nodules about the base of the growth removed.

The diagrams are intended to show (1) that the exostoses do not all originate in the neighbourhood of the epiphyses; (2) that in every case they do originate thus, or from the usual sites of muscular attachment,* or from both these positions; (3) that the bones of the face and spinal column (to palpation), the sternum and patellæ are exempted, and the bones of the head almost so, while the long bones, scapulæ, and ribs are extensively affected; (4) that the ilium is affected in three of the cases; (5) that sesamoid bones may exist concurrently with the exostoses; (6) that the growth may bind together adjacent long bones; (7) that no exostoses of the subungual variety are present; (8) that the disposition of the growths is to a high degree symmetrical.

* See next Abstract.

The mother considers it possible that the "bones" were present at birth, though not noticed for some weeks or months thereafter. In the father's case the tumours continued to grow up to about 20 years of age, since which time he thinks they have even diminished in size. As to bursæ, Maclean says these may be developed; apparently no large ones were present.

Of the bones affected the tibia and scapula are most largely affected.

The average number of growths in the father and aunt is 41.5, that in the four children 92.7. That is to say, the affection is more developed in the second generation.—(*Bristol Medico-Chir. Journal*, December, 1890.)

Anomalies of Bones and Joints, Congenital Dislocations, &c., in relation to (1) Local Hypertrophies; and (2) Multiple Cartilaginous Exostoses. By F. Bessel Hagen in Heidelberg.—Virchow first clearly distinguished the two kinds of multiple exostoses—namely, (1) those due to ossifying cartilaginous growths, and (2) those due to the ossification of muscular insertions and fasciæ. The clinical features of the former are now well known. They tend to hereditary transmission. In the first years of life, without obvious exciting cause, there appear lateral elevations on those parts of the bones which are concerned in growth; these, during the period of growth, become changed to bony masses which, still covered with a layer of cartilage, continue to grow until, with the completion of the development of the body, their limit is also reached.

Only in a few of the cases recorded is there any note of any special irregularities of the development of the bones or malformations of joint surfaces which had been observed; and even when this was the case no causal relation of the one to the other has for the most part been suspected. Traumatism has been freely invoked to explain the accompanying deformities. Volkmann, however, on the ground of one of three cases in which the exostoses occurred—namely, in a boy presenting typical rachitic deformities, suggested that the development of such exostoses was possibly a manifestation of rickets. For the irregular growth of the ulna in his two other cases Volkmann had no explanation to offer. Helferich was the first to point out that the formation of exostoses on the bones may occur at the expense of their growth in length. In illustration of this relation, the writer cites two cases of so-called congenital dislocation of the head of the radius associated with multiple exostoses. Not only in the forearms, but in other parts of the body there were indications of a marked kind, of interference with the normal growth of the bones, but nowhere any suggestion of rickets. In the forearm affected, the ulna was the seat of a large exostosis, the bone itself shortened, and the radius dislocated. In the father of one of the patients a similar less pronounced shortening of the forearm was found without dislocation of the radius, but with faulty position of the hand, due to the disproportionate growth of the forearm bones; here, also, there were multiple exostoses. The author has examined other patients to the number, in all, of eleven, in whom multiple exostoses were present, and, without exception, found in them all irregularities in the development of the body and its different parts.

Cases are also described in detail where the so-called congenital dislocation of the radius occurred with a symmetrical or hypertrophic development of the limb or part of it without the presence of exostoses.—(*Arch. für Klin. Chir.*, Bd. 41, Hft. 2.)

Herniotomy and the Management of Gangrenous Bowel.

—Despite the brilliant results obtained in recent times, and more especially by Czerny and Kocher, primary resection of gangrenous bowel is still an operation of considerable risk. Where the gangrene is only threatened—that is, where the condition of the bowel would commonly be described as doubtful, an operator will naturally shrink from such a severe procedure. Hitherto the alternative usually adopted in such cases has been to leave the loop lying in or projecting from the wound after relief of the constriction. But this has the drawback that in most cases it makes no provision for the circulation of

the intestinal contents. Strangulation is relieved, but not obstruction—unless, indeed, very free division of the hernial orifice be practised, which, for obvious reasons, is undesirable. Professor Helferich recommends the formation of an entero-anastomosis between the afferent and efferent portions of intestine. A considerable length of bowel on the efferent side may have to be pulled down in order to get the part which has suffered by extreme distension (above the constriction). This will vary according to the duration of the strangulation, but a certain amount of circulatory disturbance is no contra-indication, and a hand's-breadth above the point of constriction will in most cases suffice.

Contents of coils to be pressed back, and the coils compressed with loops of india-rubber tubing passed through the mesentery, careful packing of wound to prevent contamination by feces, incisions longitudinally opposite mesenteric attachment about 4 cm. long, washing out of the included portion of bowel, careful stitching.

As to the use of Senn's bouy or other rings, Helferich has so far not ventured to use them, being restrained by fear of their pressure acting injuriously on a bowel whose vitality is already impaired.

Helferich records two cases; in the successful one gangrene of the suspected loop occurred, and the portion was resected. This to be done some little way from the hernial orifice—say, one to two fingers'-breadth. When union is complete, and this may require a further stitch or two, reduction may be attended to. This tends to occur spontaneously, and the careful use of compresses may suffice to make it complete.

The other case recorded, a woman of 76, died on the day of the operation, she having already been very much reduced (three days' strangulation). It is of interest (*vide infra*) that great congestion of the lungs was found, with fat embolism; this was attributed to the attempts at taxis preceding operation acting on a mass of omentum which accompanied the bowel.—(*Arch. für Klin. Chir.*, Bd. 41, Hft. 2.)

Pulmonary Symptoms following Operations for Strangulated Hernia.—Lesshaft, working in the Pathological Institute in Berlin, has made an exhaustive enquiry into this subject, based upon a review of the *post-mortem* reports of the institute for the last thirty years, as well as the statistics of other observers, and pursued further by experiments on dogs and rabbits. The enquiry was prompted by the statements made by Pietrzikowski upon clinical and *post-mortem* evidence as to the frequency of lung complications after operation for strangulated hernia, and his attempt to demonstrate what had been suggested by Gussenbauer—that these were due to embolisms from the more or less thrombosed vessels of the liberated bowel.

His conclusions are as follows:—(1) Only in a comparatively small number of cases operated on for strangulated hernia can pneumonias be recognised *post-mortem*; (2) These are to be regarded as insufflation pneumonias, always provided there are no complications on the part of the peritoneum (metastatic septic cases), or old lung affections such as bronchitis, emphysema, &c., to account for them; (3) Considering the pulmonary symptoms in relation to the alterations in the piece of bowel which has been strangulated, it is seen that as a matter of fact pneumonias have been of more frequent occurrence in those cases where the alterations in the portions of bowel concerned showed the appearances of venous stagnation and infiltration; on the other hand, the fact is also made clear that even when gangrene had occurred, and the strangulated portion of bowel had accordingly to be excised, still pneumonias were found at the *sectio*, and that, accordingly, the explanation of this is not that given by Gussenbauer, but all these facts support the contention of the author that the symptoms are due to insufflation pneumonia.—(*Virchow's Arch.*, Bd. 123, Hft. 2).

[This is a highly interesting paper from the facts brought together and theories suggested; but there is a suggestion of special pleading about it, obvious, for instance, under section 3 of the conclusions, for it is evident that resection of a gangrenous piece of bowel does not necessarily imply removal of

mesentery to the extent to which thrombosis exists. The relations of the mesenteric veins to the vena cava, elsewhere pointed out, is a point that in general is perhaps not much thought of.—Ed.]

Excision of the Ankle.—Lauenstein describes a simple procedure to lay open the ankle-joint. (1) The foot lying on its inner side, an incision is made along the lower end of the fibula, and curving forwards at an open angle. The incision begins where the bone emerges from between the bellies of the peroneus brevis and peroneus tertius, and terminates at the level of the astragalo-scapoid joint, near the tendon of the peroneus tertius. (2) The skin is reflected backwards and forwards until the fibula and the external part of the anterior pouch of the tibio-tarsal joint are exposed. (3) Next the fascia at the posterior edge of the fibula is split, and the sheath of the peroneal tendons opened. The soft parts at the back of the leg are then separated from the periosteum of the fibula and tibia in the length of the wound to half the thickness of the tibia. (4) Similarly, along the anterior edge of the fibula, the fascia is incised, and the soft parts separated from the front of the bones, as was done behind. The capsule of the joint is now opened in front of the malleolus, the ligaments between the inner surface of the malleolus externus and the astragalus and os calcis divided with a fine knife, which latter procedure is facilitated by firm rotation inwards of the extended foot (supination). A continuation of this movement levers the astragalus downwards and forwards from under the extremity of the fibula.

The procedure is also adapted to the excision of the astragalus.—(*Arch. für Klin. Chir.*)

[The nearest approach to this operation, of which I can find record, is that practised by the late Dr. Moses Buchanan. He too used only a fibular incision, but was content to sacrifice the peronei.—*Vide Glasgow Medical Journal*, vols. ii and vii.—Ed.]

Cœliotomy.—Dr. R. P. Harris, Philadelphia, pleads for the substitution of this term for laparotomy, to indicate abdominal section. Laparotomy literally means incision of the soft parts between the false ribs and the crest of the ileum, and only since 1811 has come into use on the larger meaning. A term for incision of the flank, however, is needed, and Dr. Harris maintains that laparotomy should be limited to this, and that cœliotomy should be used for "abdominal section," which is its literal meaning.—J. K. K.

EPIDEMIOLOGY.

By ARCH. K. CHALMERS, M.D., D.P.H. CAMB.

Vital Statistics of the Peabody Buildings and other Artizans' and Labourers' Block Dwellings.—This formed the subject of a communication by Dr. Newsholme to the Royal Statistical Society in February last. The average density of population for all the Peabody Buildings is 751 persons to an acre, as compared with 58 for all London. The death-rate of London being 17·4, that of the Peabody Buildings should, by Dr. Farr's formula of the relationship between density and mortality, be 24·21 per 1,000. The actual death-rate was, however, only 16·49, from which it is maintained that given houses, properly constructed and drained, and given cleanly habits on the part of the tenants, increased aggregation of population in a given area has no influence in raising the death-rate, except in so far as it is accompanied by overcrowding in individual rooms, an event which is by no means necessary under the circumstances named. In other words, there is no causal relationship between density of population *per se* and a high mortality.

The average distribution of the Peabody population is as follows:—Out of every 1,000 persons under 5 years there were 169 as against 131 for all London; 150 between 5 and 10 as against 110; the proportion between 10 and 15 was also higher than London, but between 15 and 25 lower than London. Between 25 and 55 the proportion did not differ widely, but after 55 there was a lower proportion than in London. In order to make the returns comparable with the all England death-rate the factor for correction was found to be 1·0391 as compared with 1·0615 for London. From which it follows that the age and sex distribution was less favourable to a low mortality than that of the general population of London; and the accepted statement that the population of the Peabody Buildings is a selected one is untrue so far as age and sex distribution are concerned. Selection is, however, exercised, to the extent that dirty and dissipated people are not admitted, or are got rid of when their faults are detected; but considerable leniency is shown towards those who are temporarily unable to pay rent.

Birth-rates.—For the five years 1886-90, the mean annual birth-rate in the Peabody Buildings was 40·24; in the dwellings of the Metropolitan Association, 32·98; in the Improved Industrial Dwellings, 35·21, as compared with 30·81 for all London.

General Death-rate.—Corrected by the factor previously mentioned, the death-rate for the Peabody Buildings averaged 2 per 1,000 lower than that of London during the 12 years ending 1885; subsequent to that the two approximated each other. In 1890 the Peabody Buildings death-rate was slightly higher.

Mortality at different Ages.—Except in the first 5 years of life the result is favourable to the Peabody Buildings. The infantile mortality in the buildings being lower than that in London, the increased rate between the ages of 1 and 5 is to be taken in connection with the higher mortality from measles and whooping-cough.

Infantile Mortality.—In 1882-90 the average annual rate for London was 151·9 per 1,000 births; in the Peabody Buildings it was 139·2. During the 5 years 1886-90 it averaged 121 in the dwellings of the Metropolitan Association and 130 in the Improved Industrial Dwellings. The delicate index of social and sanitary conditions afforded by the infantile mortality is emphasised.

Zymotic Death-rate.—(1) The incidence of enteric fever, judged by the number of deaths, is only about half that for the whole of London in 1888-9. (2) The mortality from diarrhoea is slightly lower than in London. It would be considerably lower were it not that about 70 per cent. of the total mortality from diarrhoea occurs among infants, and the Peabody Buildings have an excessive proportion of infants. Stated in proportion to births, the deaths in 1888-9 under 1 year from diarrhoea were 4·36 as against 13·44 for all London. (3) The death-rate here is higher, probably owing to the facilities for personal communication. (4) Diseases due to direct infection from person to person have, with the exception of small-pox, a much higher mortality than in all London. This is especially shown in measles and whooping-cough, which are treated at home, and to a less extent in scarlet fever, cases of which are usually removed to hospital. The excessive prevalence of measles and whooping-cough in the Peabody Buildings is not altogether explained by the unusually larger proportion of children under 5 years.

Tubercular Diseases.—The death-rate from phthisis is ·05, and from all tubercular diseases ·10 per 1,000 greater than for all London; but, as compared with the more central parts of London, there is no excess.

Compared with Battersea, which has a typical working-class population, the general death-rate is 17·48 in the Peabody Buildings, as against 15·15 in Battersea, the death-rate from tubercular diseases being identical in both. In infantile mortality, and in mortality from enteric fever and diarrhoea, the Peabody Buildings come out favourably; but they compared unfavourably as regards most infectious diseases.

The paper also contains particulars as to buildings, rental, occupation, and income of the inhabitants.—(From an abstract in *Public Health* for May, 1891.)

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